Chapter Five: Adequacy Analysis

Chapter Three of the Utah Continuous Airport System Plan describes the process used to identify roles for each airport in the Utah Airport System. Following the role classification of the state's airports, facility and service objectives were established for each airport role. The five airport role classifications are: International, National, Regional, Community, and Local. Stratification of the airports into functional roles within the Utah Airport System provides a baseline for evaluating the performance of Utah's existing airport system. Performance measures are used to evaluate the system to determine its current level of operation. This evaluation provides information in three main areas: 1) where the current airport system is adequate to meet the state's near and long-term aviation needs; 2) where specific airport or system deficiencies exist within the state; and 3) where surpluses or duplications of service exist within the system. This evaluation also provides the foundation for subsequent recommendations for the Utah Airport System, as well as for individual study airports.

This chapter provides an analysis of the existing airport system's adequacy with respect to three general system goal categories. The three goal categories established to evaluate the system include the following:

- Activity Served – Provide a system of airports with adequate facilities and services to serve the existing and projected levels of aviation activity or demand

- Economic Support – Provide an airport system that supports economic development to regional and local businesses by developing airports that allow sufficient access to the national air transportation system

- Facilities & Accessibility – Provide facilities that are accessible from the ground and air to meet the demands of users

The following sections of this chapter use each of the goal categories to evaluate the existing Utah Airport System. These analyses are based on conditions as of January 2007.

GOAL CATEGORY: ACTIVITY SERVED

For an airport system to adequately serve a state, it should provide the level of facilities necessary to accommodate demand from both current and future users. These users include the traveling public as well as individual aircraft operators. The ability of any airport system to meet the Activity Served goal category is determined by several factors.

One factor used to measure activity served is by determining the coverage or access provided by system airports to all geographic areas of the state, and by determining the percentages of the state's population that are within reasonable drive times of system airports. A second factor used to determine activity served is by measuring the

coverage provided by airports within each classification. A third factor in the measurement of activity served is determined by measuring the effective coverage provided by airports that offer certain types of facilities and services.

Federal Aviation Administration (FAA) system planning guidelines recommend that general aviation airports be located within 30 minutes of users. ArcGIS 9, a Geographic Information System (GIS), was used to determine the ground coverage of airports and their proximity to existing and future users. Applying this rule of thumb to Utah's system airports using Geographic Information Systems (GIS), coverage areas for each airport in the Utah Airport System were developed. GIS uses map-based systems to assign drive times to airports based on the type of road and posted speed limit. When the 30-minute drive times for each airport are calculated and applied to mapping that includes data such as population, the ability of Utah's airport system to serve the state and its population can be determined.

Aircraft accessibility is also an important factor in measuring system performance. It's influenced by factors such as the type of approach available (precision, non-precision, or visual), airport lighting, and the presence, or lack thereof, of on-site weather reporting equipment to support the ability of aircraft to land in all weather conditions.

Performance measures used to evaluate the system's ability to serve activity, both in terms of adequate ground and aircraft access are discussed below.

- Percent of Utah's population having access to an airport with commercial service
- Percent of Utah's population within 30 minutes of an airport with FAR Part 135 passenger aircraft charter service
- Airports accommodating operations conducted under instrument flight rules (IFR) from outside Utah
- Airports accommodating air medical operations

Percent of Utah's population having access to an airport with commercial service

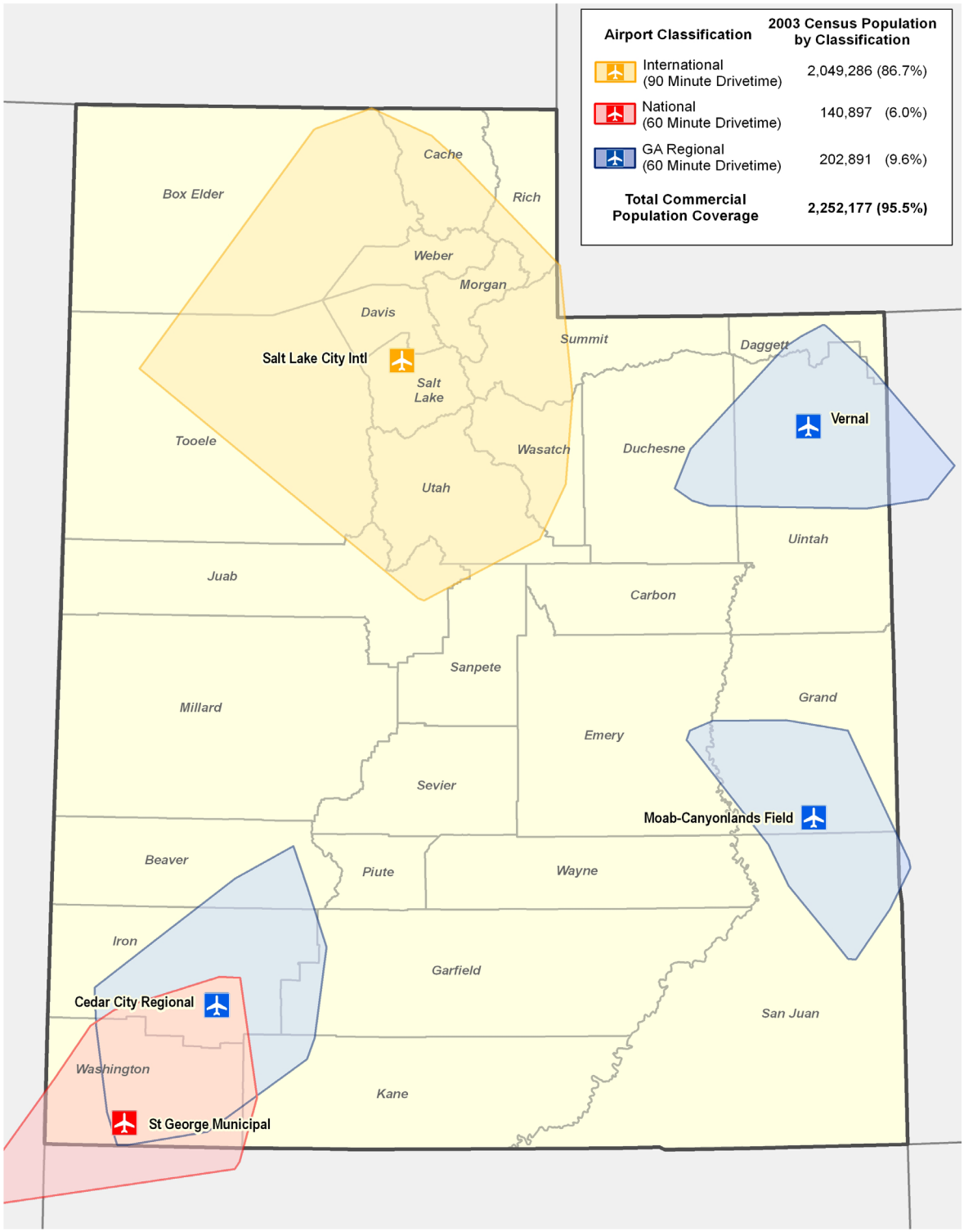
It is important that commercial service airports provide adequate coverage to Utah's population. Commercial service airports typically serve a larger market area than general aviation airports since there are fewer commercial service airports throughout the U.S. For large commercial service airports with international or low cost carrier service, a 90-minute drive time is typically used to evaluate passenger accessibility. This drive time is appropriate because passengers are typically willing to drive further to reach an airport that has this type of service. For small commercial service airports, including those served by only one airline or that have service to only a few destinations, passengers are typically willing to drive 60 minutes to obtain commercial airline service.

GIS analysis depicted in **Exhibit 5-1** shows that 95.5 percent of Utah's population is within a 90-minute drive time of the Salt Lake City International Airport or within a 60-minute drive time of another airport that supports commercial service. The other airports

in Utah that currently support scheduled commercial air service include Cedar City, Moab, St. George, and Vernal. Access to commercial air serve is provided to a majority of Utah's population by two airports, Salt Lake City International and St. George Municipal. The remaining three commercial service airports (Cedar City, Moab, Vernal) have single carrier service and are located in more sparsely populated areas of the state, thus providing service to a limited portion of Utah's population. The Wendover and Bryce Canyon airports were not considered in this analysis. These airports support frequent aircraft charter operations but do not provide scheduled aircraft service to the general public.

Areas of Utah that lie beyond the 60-minute and 90-minute drive time include the central and south-east portions of the state. These areas of Utah are sparsely populated, with only two towns (Price and Richfield) having a population greater than 5,000 people. While over 95 percent of the population is within the service areas for the commercial service airports, approximately 35 percent of the state's land area is contained within the drive time coverage provided by these airports. This indicates that while there are large areas of land that are beyond the coverage areas of the commercial service airports, there is limited population to be served in the 65 percent of the land area that is not covered.

Exhibit 5-1
Population with Access to Scheduled Commercial Air Service



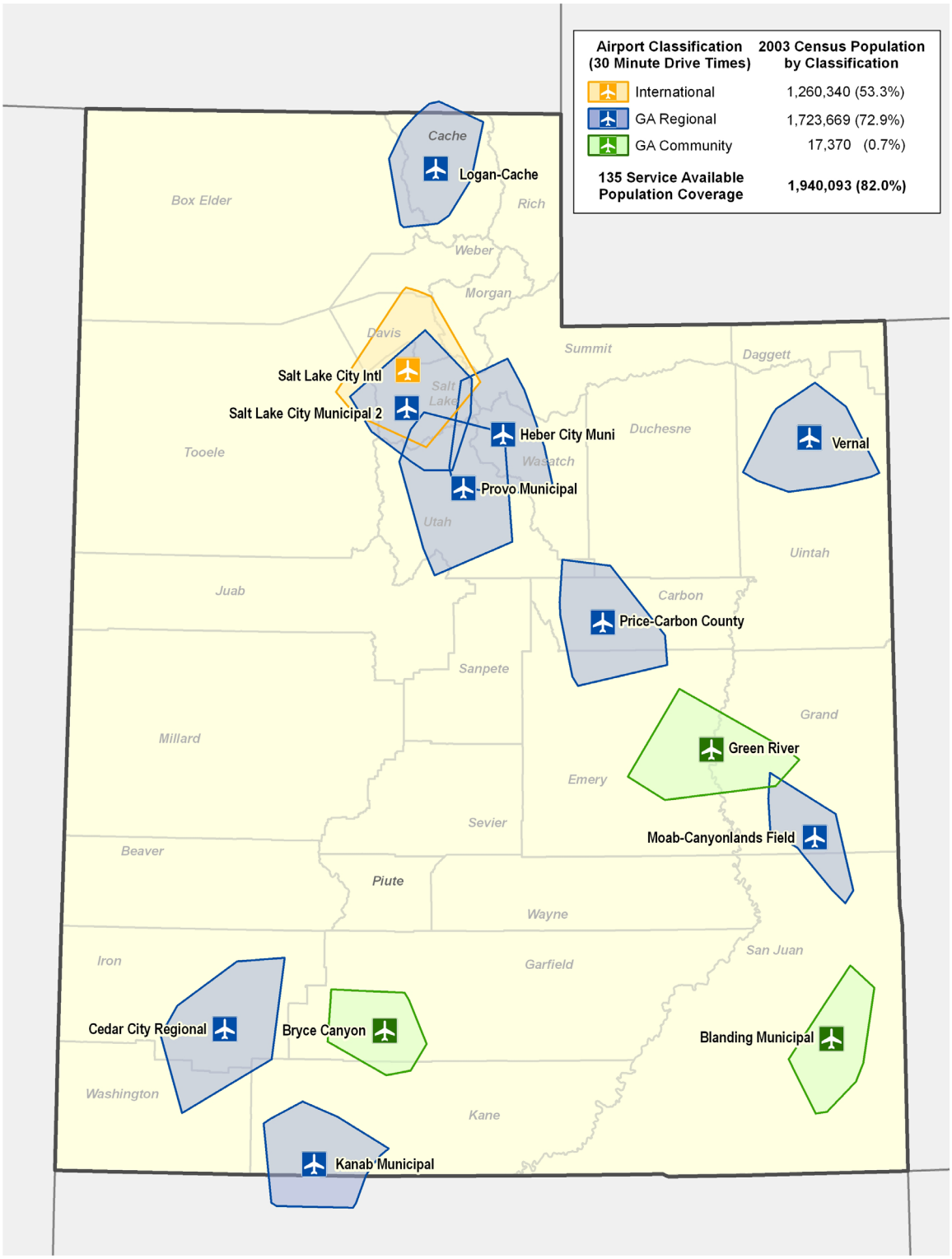
Source: 2003, US Census

Percent of Utah's population having access to an airport with FAR Part 135 passenger aircraft charter service

Many companies and individuals are increasingly chartering aircraft for their air transportation needs. Air charter companies operate on an "on-demand" basis and are often referred to as "Air Taxis". These service providers allow users to travel on their own schedule with considerable flexibility. Charter operators in Utah operate a range of aircraft from small single-engine piston to large business jets capable of traveling nonstop anywhere in the United States and beyond. Air Taxi or passenger aircraft charter service providers operate under Federal Aviation Regulation (FAR) Part 135. These regulations outline the rules and requirements that these service providers must adhere to in providing air transportation services to the general public.

According to FAA records obtained from AIRPAC Inc., Utah currently has 13 airports with a passenger aircraft charter operator based on-site. As shown in **Exhibit 5-2**, 82 percent of the state's population is within a 30-minute drive time of one of these airports. Although most Utah airports do not have a charter operator based at the airport, this service can still be provided at most airports. Aircraft charter operations can occur at any airport that meets the operational requirements of the chartered aircraft. However, airports with a charter operator based at the airport, generally, are able to provide higher levels of service to individuals desiring to utilize chartered aircraft.

Exhibit 5-2
Population with Access to Air Charter Service



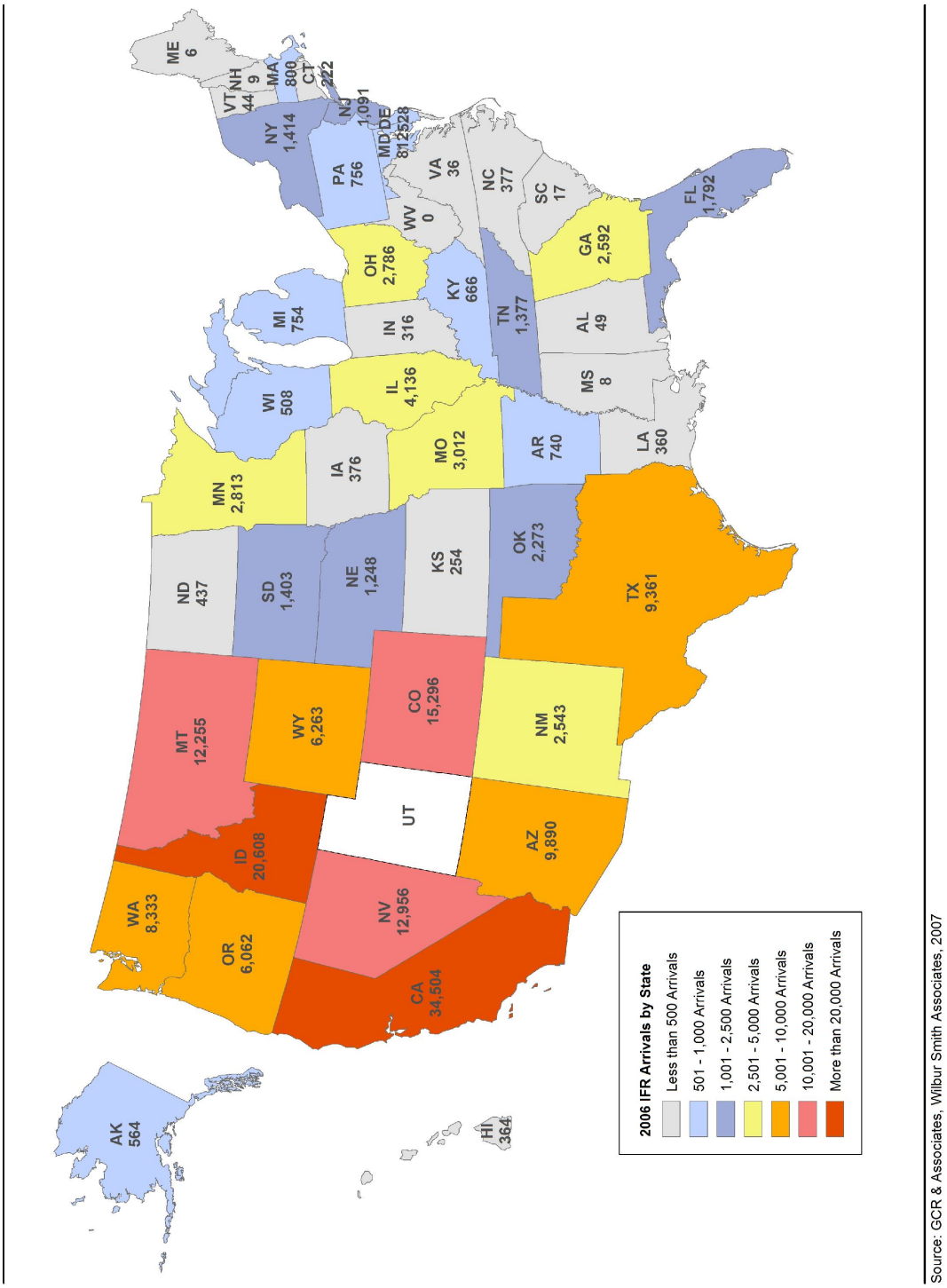
Source: 2003, US Census

Airports accommodating Instrument Flight Rule (IFR) operations from outside Utah

To identify airports in Utah that provide the greatest contribution to the national air transportation system and airports serving business related operations, IFR flight plan data for calendar year 2006 was reviewed. Specifically, the number of IFR arrivals conducted by aircraft originating outside the State of Utah to each of the system airports was identified.

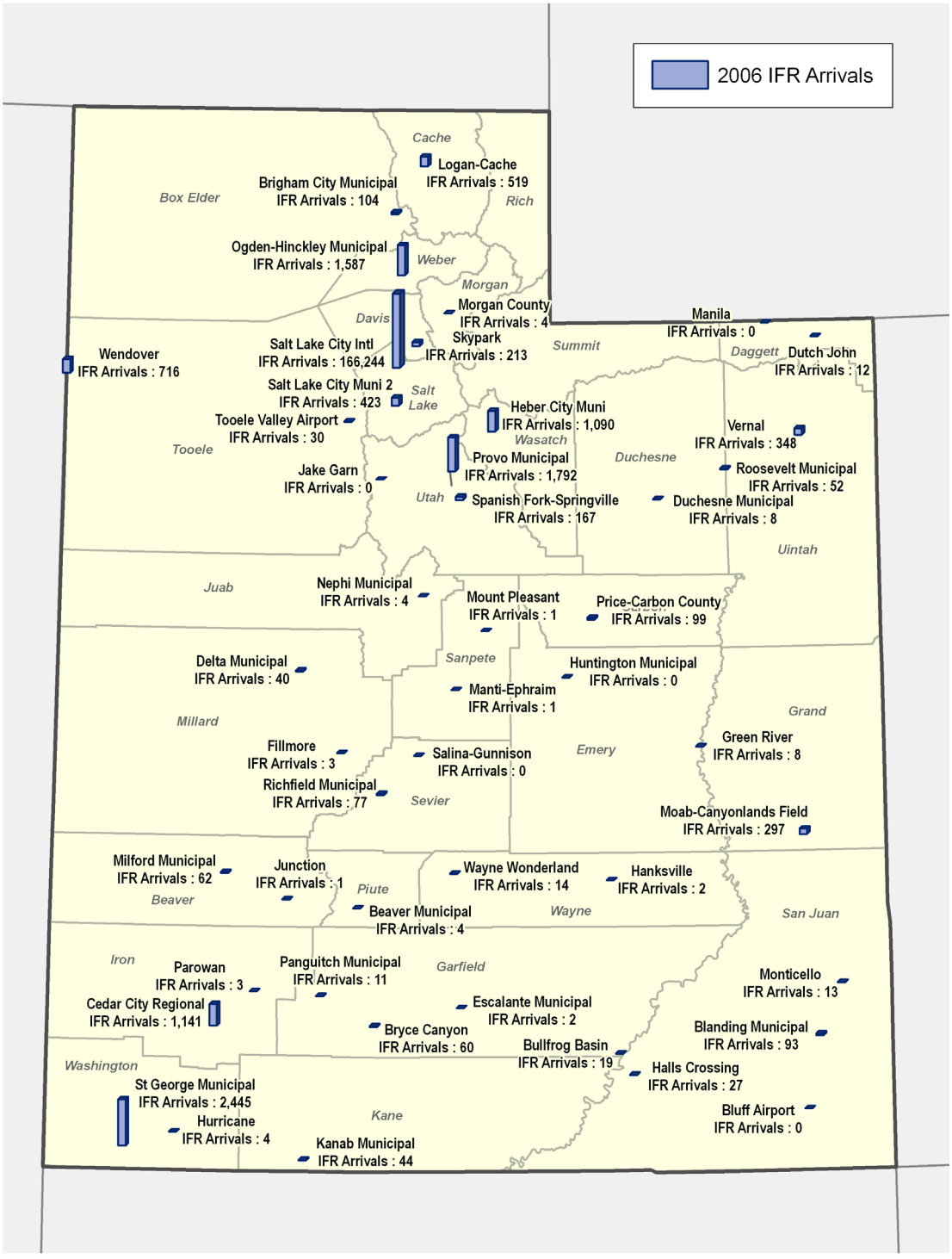
The majority of IFR operations in Utah, particularly those originating outside Utah, are attributable to airline, air-cargo and general aviation business aircraft activity. **Exhibit 5-3** identifies the number of IFR operations in each state that originated outside of Utah with an airport in Utah as a destination in 2006. California had the greatest number of originations primarily due to several cities in California having frequent non-stop scheduled air service to Salt Lake City International. As would be expected, states in the surrounding western United States had the highest number of originations, as it is possible for a wider range of aircraft to travel non-stop from these states to Utah. **Exhibit 5-4** illustrates the number of IFR arrivals that occurred at each system airport during calendar year 2006. Salt Lake City International accommodated by far the greatest number of IFR operations due to the presence of scheduled air service, several air cargo carriers as well as a high level of general aviation business class aircraft activity. Excluding Salt Lake City International, St. George Municipal, Ogden and Provo airports received the highest number of IFR arrivals from outside the state. All three of these airports have the facilities and services available to accommodate the majority of general aviation business class aircraft and are located in close proximity to many business and tourism destinations. The number of IFR arrivals during 2006 ranged from over 166,000 at Salt Lake City International to none at several system airports. **Table 5-1** identifies the total number of IFR arrivals at each system airport that originated from outside Utah. Additionally the table identifies the five most common states that IFR flights originated from. The top four airports in Utah receiving the greatest numbers of IFR arrivals from outside the state all received the greatest number of arrivals from California.

Exhibit 5-3
Utah Airport 2006 IFR Operations from Outside Utah



Source: GCR & Associates, Wilbur Smith Associates, 2007

Exhibit 5-4
Utah Airport 2006 IFR Arrivals



Source: 2006, GCR & Associates

Table 5-1
2006 IFR Arrivals Originating Outside Utah

Associated City	Airport Name	UCASP Classification	Total IFR Arrivals from outside Utah	Top Five Origin States for IFR Arrivals (State Abbreviation – IFR Arrivals)				
Salt Lake City	Salt Lake City International	International	166,244	CA - 31,804	ID - 19,823	CO - 14,264	MT - 11,984	NV - 10,607
St George	St George Municipal	National	2,445	CA - 1,045	NV - 807	AZ - 159	ID - 108	CO - 86
Provo	Provo Municipal	Regional	1,792	CA - 400	NV - 226	AZ - 215	ID - 195	CO - 156
Ogden	Ogden-Hinckley Municipal	Regional	1,587	CA - 209	ID - 181	WY - 161	CO - 134	AZ - 103
Cedar City	Cedar City Regional	Regional	1,141	NV - 666	CA - 158	AZ - 53	CO - 47	NM - 43
Heber	Heber City Municipal	Regional	1,090	CA - 308	AZ - 166	CO - 161	NV - 74	TX - 43
Wendover	Wendover	National	716	NV - 248	TX - 86	CA - 65	WA - 47	WI - 40
Logan	Logan-Cache	Regional	519	ID - 107	CA - 99	AZ - 62	WA - 47	CO - 41
Salt Lake City	Salt Lake City Muni 2	Regional	423	CA - 77	NV - 73	AZ - 66	CO - 52	ID - 30
Vernal	Vernal	Regional	348	WY - 81	CO - 70	OK - 43	TX - 36	NM - 33
Moab	Moab-Canyonlands Field	Regional	297	NM - 82	CO - 60	CA - 54	TX - 17	NV - 17
Bountiful	Skypark	Regional	213	WY - 57	AZ - 35	CA - 29	ID - 24	NV - 17
Spanish Fork	Spanish Fork-Springville	Regional	167	CA - 51	AZ - 27	NV - 21	WY - 13	ID - 13
Brigham City	Brigham City Municipal	Regional	104	CA - 48	CO - 14	NV - 12	WA - 4	TX - 4
Price	Price-Carbon County	Regional	99	CO - 20	TX - 14	WY - 9	PA - 8	NV - 8
Blanding	Blanding Municipal	Community	93	CO - 31	AZ - 24	CA - 18	NM - 7	NV - 4
Richfield	Richfield Municipal	Regional	77	NV - 12	CA - 10	ID - 8	AZ - 8	CO - 7
Milford	Milford Municipal	Community	62	CO - 17	CA - 10	MT - 6	ID - 6	NV - 5
Bryce Canyon	Bryce Canyon	Community	60	CA - 26	AZ - 7	NV - 6	NM - 3	ID - 3
Roosevelt	Roosevelt Municipal	Community	52	CO - 17	WY - 8	TX - 5	CA - 5	NM - 4
Kanab	Kanab Municipal	Regional	44	CA - 13	AZ - 8	NV - 6	NM - 6	TX - 4
Delta	Delta Municipal	Community	40	CA - 15	CO - 7	ID - 5	NV - 4	AZ - 4
Tooele	Tooele Valley Airport	Regional	30	CO - 7	AZ - 6	CA - 5	ID - 4	MT - 3
Halls Crossing	Halls Crossing	Local	27	CO - 14	CA - 4	AZ - 4	FL - 2	NV - 1
Glen Canyon Natl. Rec. Area	Bullfrog Basin	Local	19	CO - 15	NV - 1	NM - 1	CA - 1	AZ - 1

Table 5-1, Continued
2006 IFR Arrivals Originating Outside Utah

Associated City	Airport Name	UCASP Classification	Total IFR Arrivals from outside Utah	Top Five Origin States for IFR Arrivals (State Abbreviation – IFR Arrivals)				
Loa	Wayne Wonderland	Local	14	ID - 6	CA - 6	OK - 1	NV - 1	
Monticello	Monticello	Community	13	CO - 6	WA - 2	WY - 1	TX - 1	NM - 1
Dutch John	Dutch John	Local	12	CO - 6	PA - 2	NV - 2	AZ - 2	
Panguitch	Panguitch Municipal	Community	11	CA - 7	NV - 2	WY - 1	CO - 1	
Green River	Green River	Community	8	NV - 2	WY - 1	WI - 1	OK - 1	ID - 1
Duchesne	Duchesne Municipal	Local	8	CA - 2	AZ - 2	OR - 1	NV - 1	ID - 1
Hurricane	Hurricane	Regional	4	TX - 1	SD - 1	CA - 1	CO - 1	
Morgan	Morgan County	Regional	4	AZ - 2	NV - 1	CO - 1		
Nephi	Nephi Municipal	Regional	4	WY - 1	NV - 1	ID - 1	CO - 1	
Beaver	Beaver Municipal	Community	4	CA - 2	WY - 1	WA - 1		
Fillmore	Fillmore	Community	3	NV - 2	ID - 1			
Parowan	Parowan	Community	3	CA - 2	MT - 1			
Escalante	Escalante Municipal	Community	2	NV - 1	CA - 1			
Hanksville	Hanksville	Local	2	WY - 1	KS - 1			
Manti	Manti-Ephraim	Community	1	CA - 1				
Junction	Junction	Local	1	CA - 1				
Mount Pleasant	Mount Pleasant	Local	1	MT - 1				
Eagle Mountain	Jake Garn	Community	0					
Bluff	Bluff Airport	Local	0					
Huntington	Huntington Municipal	Local	0					
Manila	Manila	Local	0					
Salina	Salina-Gunnison	Local	0					

Source: GCR & Associates, Wilbur Smith Associates, 2007

Airports accommodating emergency medical flights in Utah

Due to the rural and remote nature of large portions of Utah, airports provide a vital transportation link for many critically ill and injured patients needing urgent medical care. Following a serious or traumatic injury, the first hour can be the most time-critical period during which an injured person's mortality rate can be significantly reduced if immediate and appropriate medical care can be provided. The benefits of immediate treatment by medical personnel at an on-scene emergency and rapid transport of the patient have been well-documented, resulting in hospitals and medical centers utilizing aircraft for quickly reaching critically-injured or seriously-ill patients.

Through information obtained from the two primary emergency medical flight providers in Utah (IHC Life Flight and U of U AirMed) the number of times each airport in Utah was used to transport ill or injured patients was identified. The operations were performed solely by fixed wing aircraft and do not include helicopter operations. The majority of the emergency medical flight operations originated and returned to Salt Lake City International, while some operations originated at the St. George airport, where an emergency medical aircraft is often placed on standby.

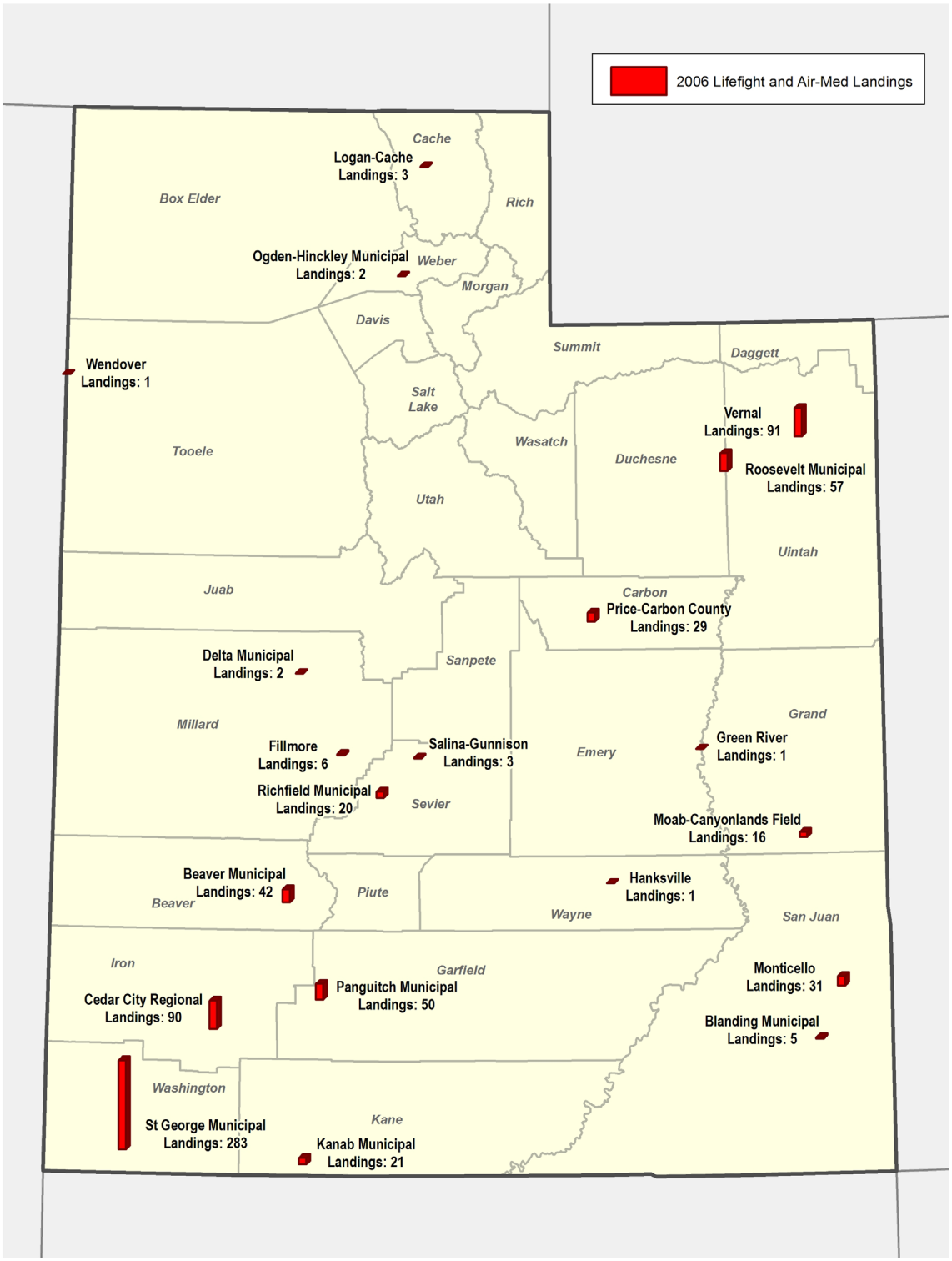
Exhibit 5-5 identifies the number of times AirMed or Life Flight used any of the state's airports in 2006 for medical transport purposes. The St. George Municipal Airport was by far the most frequently used facility, transporting many people requiring medical care and facilities only available at hospitals in the Salt Lake City area. Airports further away from the Salt Lake City area tended to have higher numbers of operations, as patients closer to the Salt Lake City area are more often transported via helicopter or ambulance.

Through discussion with the emergency medical flight providers, the following airport facilities were identified as being basic requirements for use by emergency medical aircraft:

- Runway length of 4,000 feet or greater
- Runway lighting
- Instrument approach procedure

The majority of the airports currently used by emergency medical operations meet these basic requirements with a few exceptions. Among the operations conducted by the two primary EMS operators in Utah, approximately 18 percent of the total 2006 operations occurred at an airport without an instrument approach procedure. Subsequent chapters of this study will identify these deficiencies and make recommendations for improvements.

Exhibit 5-5
2006 Life Flight and Air-Med Landings



Source: IHC Life Flight, Uof U Airmed, Wilbur Smith Associates

GOAL CATEGORY: ECONOMIC SUPPORT

Airports play a key role in supporting and promoting economic activity in Utah. Employers statewide consider the existence and efficiency of air transportation facilities when expanding or developing in a given geographic area. In business surveys conducted throughout the U.S., employers were asked to rank the importance of commercial service and general aviation airports to other factors in selecting a new site. In almost every survey, the location of a commercial service airport ranks in the top three factors considered, while the location of a general aviation airport typically ranks in the top 10. Many of the top national firms use general aviation aircraft in their business to transport employees and also have customers and suppliers who visit via general aviation airports.

Airports themselves are not typically generators of demand, however, their presence and utility lend assistance in economic growth and diversification. In addition to adequate airport facilities, market areas that airports serve must possess other characteristics that make them candidates for the attraction and retention of various economic development activities.

For this goal category, the relationship between the economic activity of the region and the demand for aviation services was examined. The following were evaluated for this section based on their proximity to the airport system's 30 minute drive time service areas:

- Location of significant tourism destinations in relation to Utah airports
- Location of oil and gas exploration and drilling activity in relation to Utah airports
- Percent of population with access to an airport supporting business jet operations
- Percent of population within a 30 minute drive time of an airport capable of supporting VLJ operations
- Percent of state employment within 30-minute drive time of a system airport
- Businesses with a propensity to use aviation within a 30-minute drive time of a system airport

Location of significant tourism destinations in relation to Utah airports

Tourism in Utah plays a significant role in the overall economic health of the state. According to the *2006 Utah Tourism at a Glance* report published by the Utah Office of Tourism, jobs in the travel and tourism-related industries comprised approximately 10 percent of Utah's total non-farm employment. Additionally the report indicates that 75 percent of the measurable economic impacts of tourism in the State of Utah are attributable to activity in six of Utah's 29 counties. These counties include Salt Lake, Utah, Davis, Weber, Summit and Washington. These counties are also the most populated in the state and contain the highest concentrations of employment.

While other counties in Utah may receive less in terms of tourism and visitor spending, many rural communities in Utah are extremely dependent on tourism dollars. Fewer

employment opportunities exist in many rural areas of the state causing greater dependence on tourism-related industries. Tourism dominates the economies of counties in the northeast and southeast regions of the state, comprising a significant portion of the counties' employment and economic activity. As indicated above, counties in the Wasatch Front area receive the majority of tourism-related impacts in Utah. However, because of the large employment base and diversified economy of these areas, tourism makes an important, but less significant contribution to the overall economy of these counties versus elsewhere in the state. Analysis indicates that the airports along the Wasatch Front and St. George areas clearly experience the greatest demand from visitors traveling to Utah, while the airports in the more rural areas of the state experience far less demand. However, the economies in these lesser demand areas are much more dependant on tourism-related activities, making efficient access to these areas of the state even more essential. **Exhibit 5-6** identifies the locations of major tourism and visitor destinations in relation to Utah's airports. The primary visitor destinations in Utah include the National Parks and National Recreation areas, ski resorts, and Temple Square.

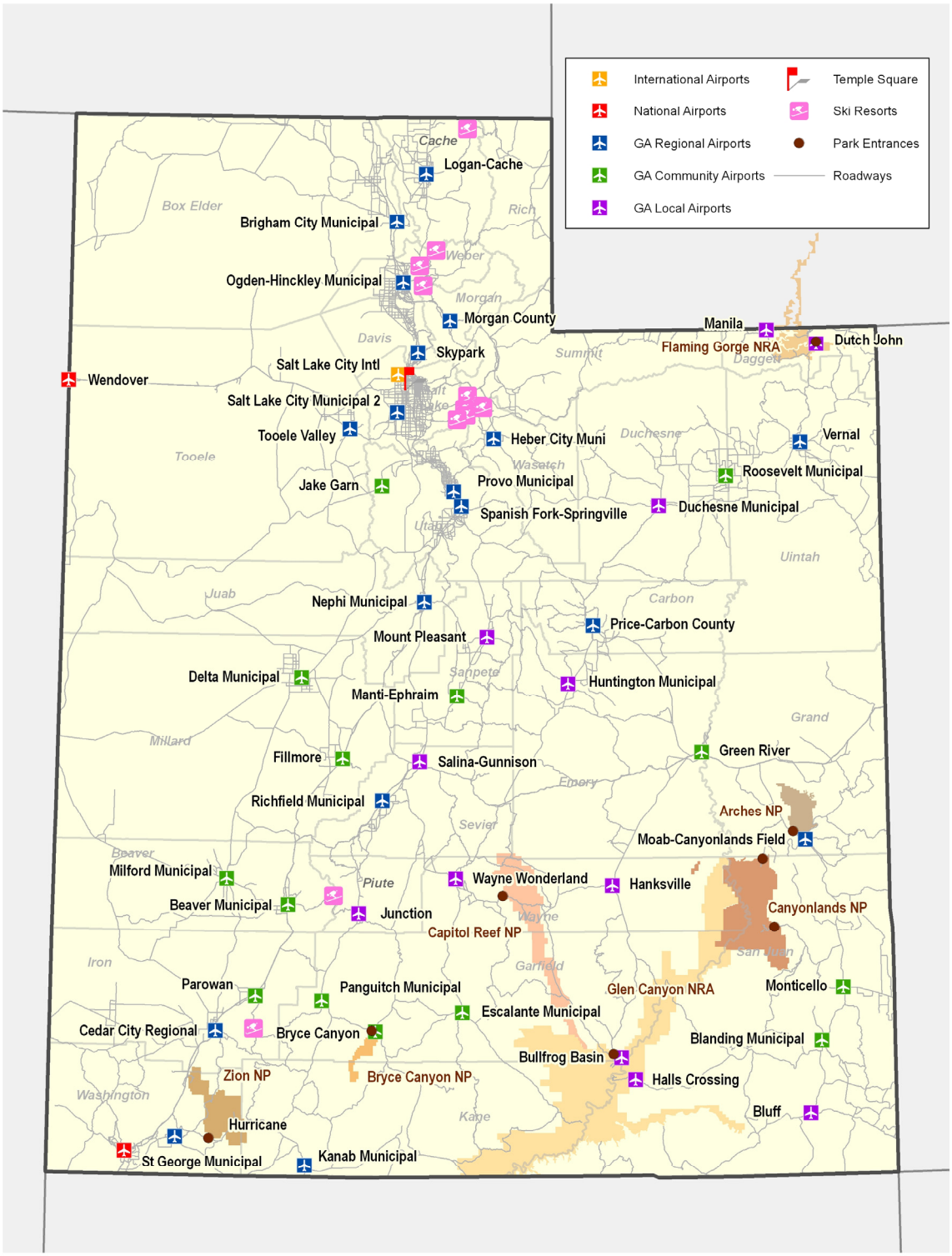
While the state's commercial air service airports provide reasonable access to Utah's major tourism destinations, the state's general aviation airports provide excellent access to visitor destinations throughout Utah. Examples include Bullfrog Basin, Halls Crossing, and Dutch John airports which regularly serve visitors who travel to the Glen Canyon and Flaming Gorge National Recreation Areas via general aviation aircraft.

Location of oil and gas activity in relation to Utah airports

Recent increases in energy costs have boosted oil and gas exploration in Utah. Oil and gas exploration primarily occurs in the eastern portion of the state. Additionally, Utah has some of the world's largest supplies of oil shale, also located in the eastern portion of the state. The oil shale deposits create the potential for significant increases in demand for aviation services in the region should it become technologically and economically feasible to process oil shale into a usable energy resource. **Exhibit 5-7** identifies the locations of oil and gas fields, oil and gas deposits, and oil shale deposits in Utah. The Vernal, Price and Richfield airports have all recently experienced increased activity as a result of oil and gas exploration. It is anticipated that these airports will continue to experience the majority of demand for aviation services generated by the oil and gas industry.

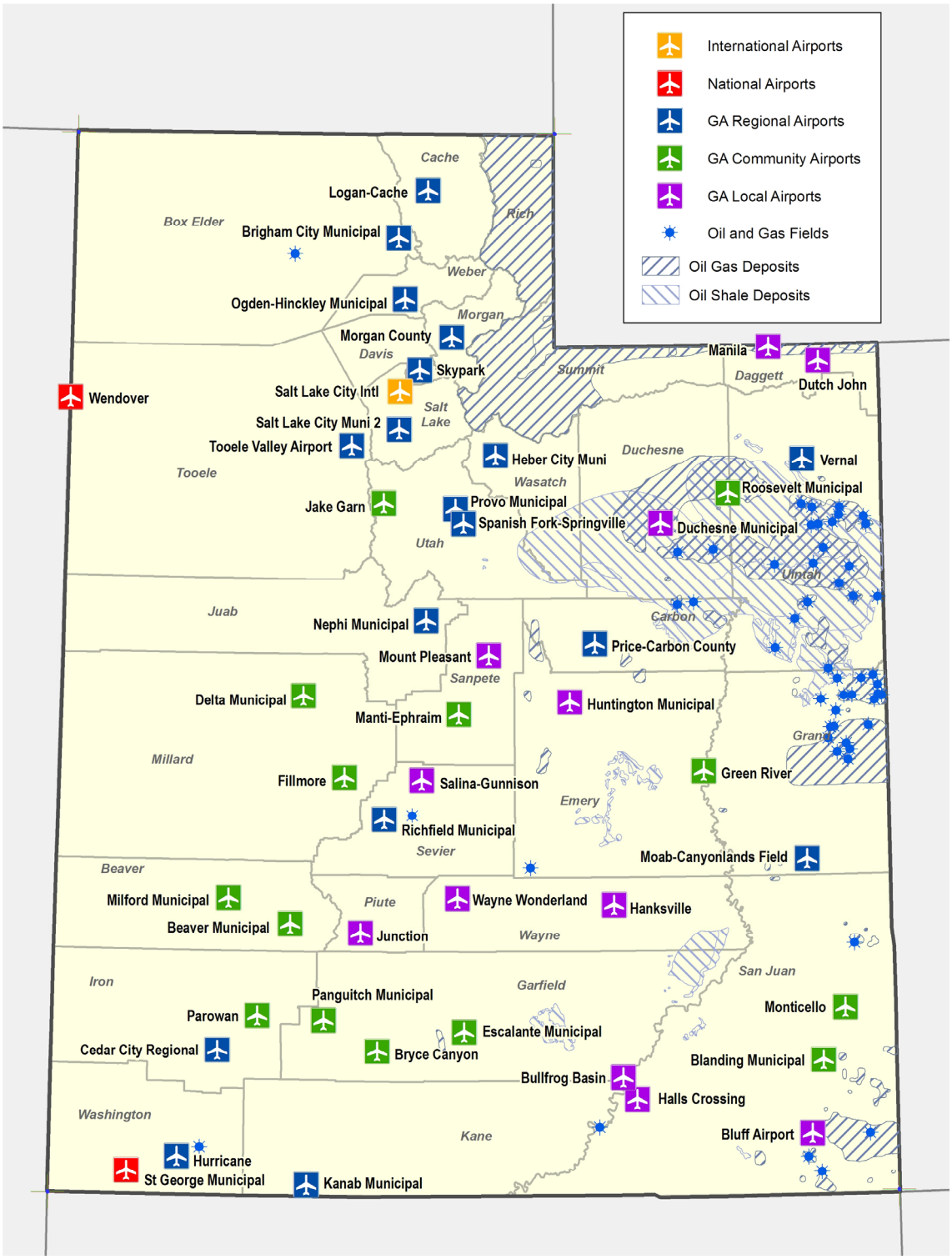
The number and location of airports in Utah is sufficient to serve the needs of the oil and gas industry. However, the facilities and services at some of the smaller airports located near oil and gas activity may not be sufficient to serve the needs of larger aircraft typically used by oil and gas companies. The ability of these airports to serve the projected demand from the oil and gas industry will be examined in subsequent chapters of this plan.

Exhibit 5-6
Major Tourism Destinations in Relation to Utah's Airports



Source: Utah AGRC, Wilbur Smith Associates

Exhibit 5-7
Oil and Gas Activity in Relation to Utah Airports



Source: Utah AGRC, Wilbur Smith Associates

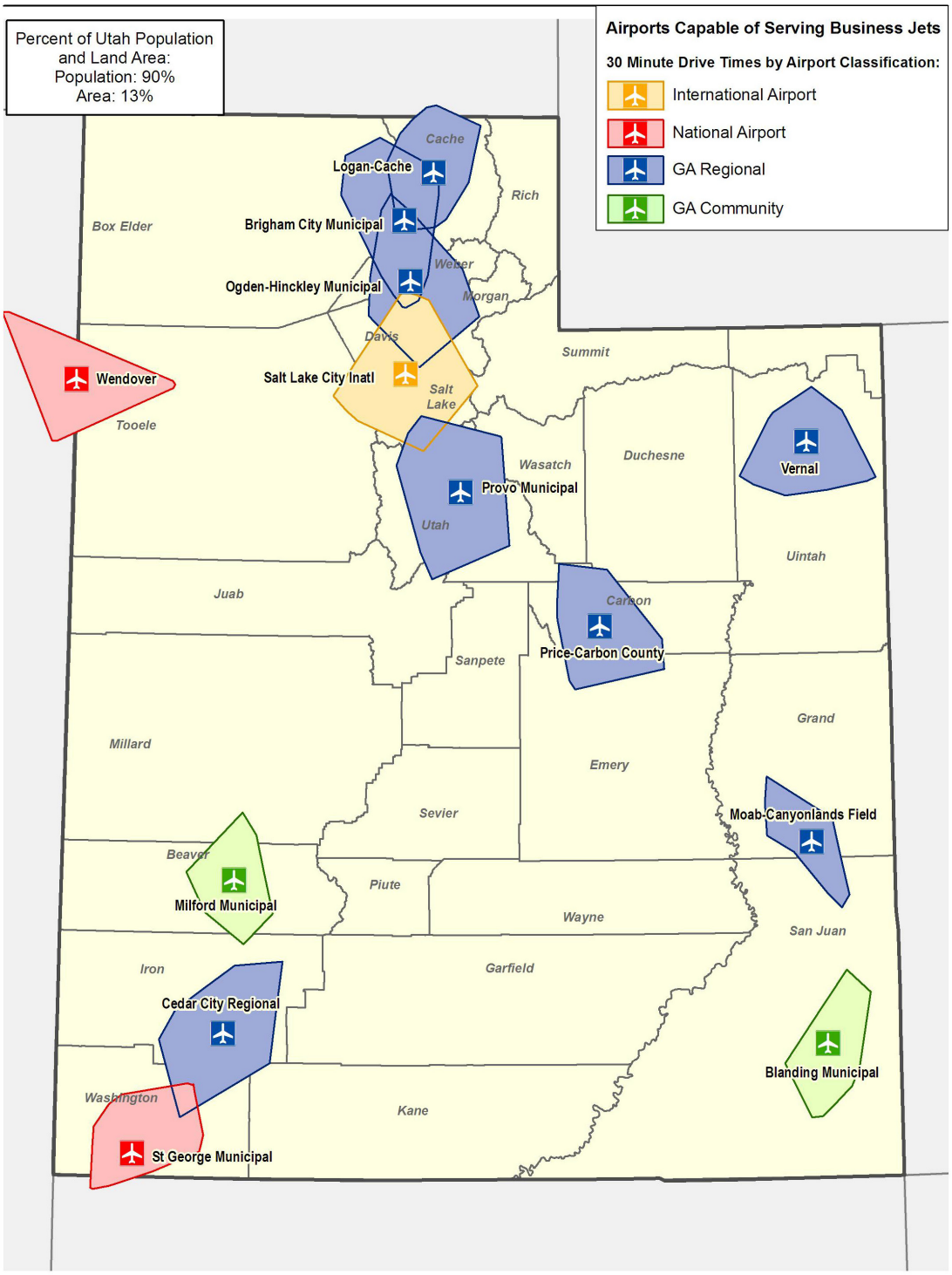
Percent of population with access to an airport supporting business jet operations

One of the fastest growing segments of general aviation is the use of business jet aircraft. Due to the size, weight, and speed of these aircraft, airport facilities must be specifically designed to accommodate this type of aircraft.

Exhibit 5-8 depicts existing airports in Utah capable of accommodating business jet aircraft. The determining factors in identifying these airports include runway length and width, pavement strength, an instrument approach, and availability of Jet A fuel. A planning "rule of thumb" indicates that business jet aircraft typically require at least 5,000 feet of paved runway length to regularly operate at an airport. Additionally, the strength of the airfield pavement must be sufficient to support the heavier loads imposed by these aircraft. For this analysis, a pavement strength of 25,000 pounds single wheel gear (SWG) was determined to be the minimum requirement to support regular business jet operations. The location of these business jet-capable airports was compared to the population to determine the accessibility of these airports.

Approximately 90 percent of Utah's population is within a 30-minute drive time of an airport capable of supporting business jet operations. The land coverage provided by these airports is approximately 13 percent of the state.

Exhibit 5-8
Utah Airports Capable of Serving Business Jets



Source: UDOA, Wilbur Smith Associates, 2007

Percent of population within a 30 minute drive time of an airport capable of supporting VLJ operations

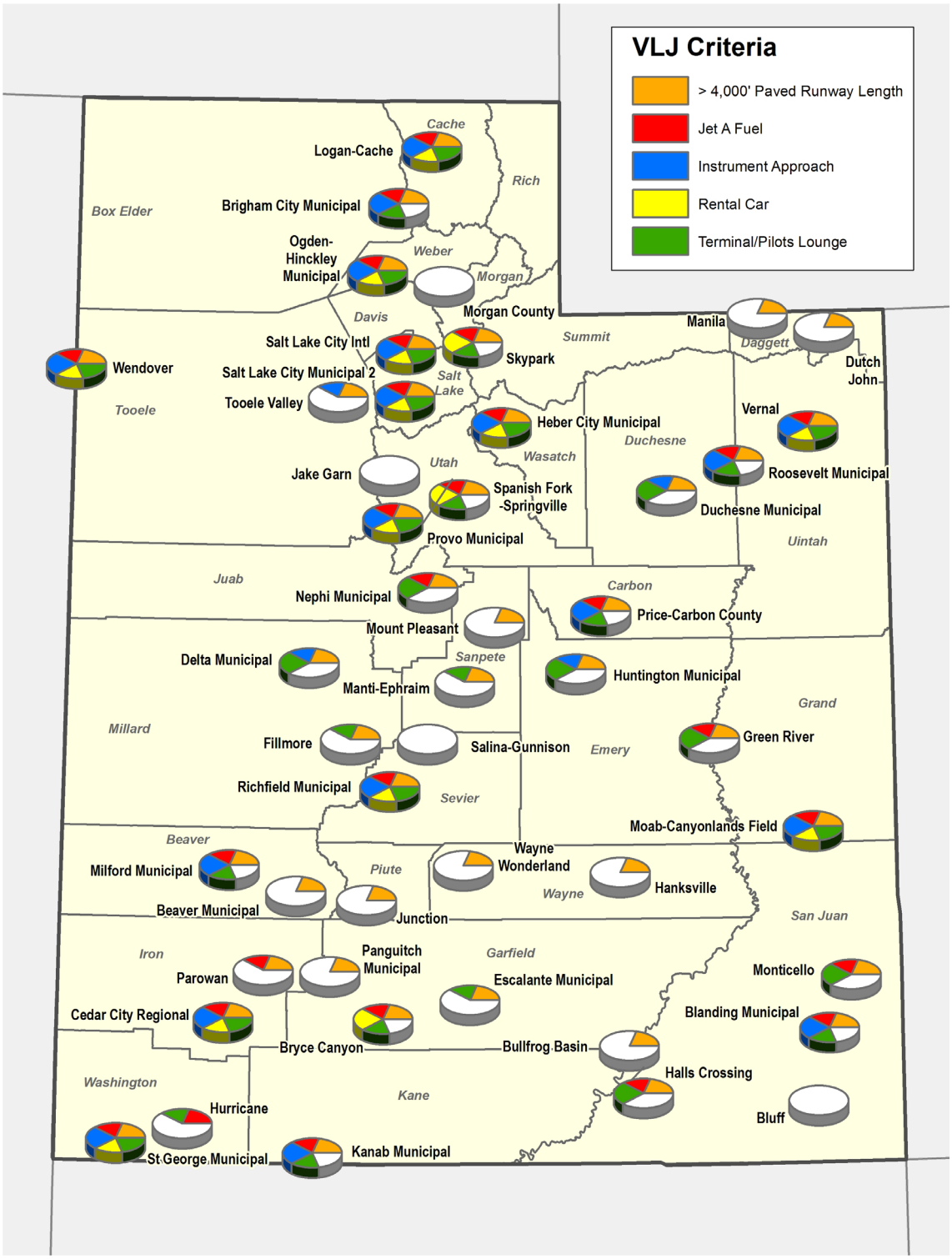
Future air travel in the United States and Utah is poised to change with the advent of the Very Light Jet (VLJ). These aircraft cost substantially less than typical business jet aircraft, in terms of acquisition and operating costs. These cost savings are projected to lower the cost of travel by general aviation aircraft, making utilization of this type of travel more affordable to a broader segment of the general public. VLJs are also anticipated to increase point-to-point air travel with travelers using smaller airports instead of larger commercial airports.

In order for communities to realize the full economic benefits of this emerging form of air travel, the state's airports must be prepared to provide certain basic services to adequately accommodate this future travel demand. The following airport criteria have been determined to be the general requirements to accommodate VLJ aircraft and passengers and are listed by order of importance:

- Paved Runway Length of 4,000' or Greater
- Instrument Approach
- Availability of Jet A Fuel
- Rental Cars
- Terminal\Pilots Lounge

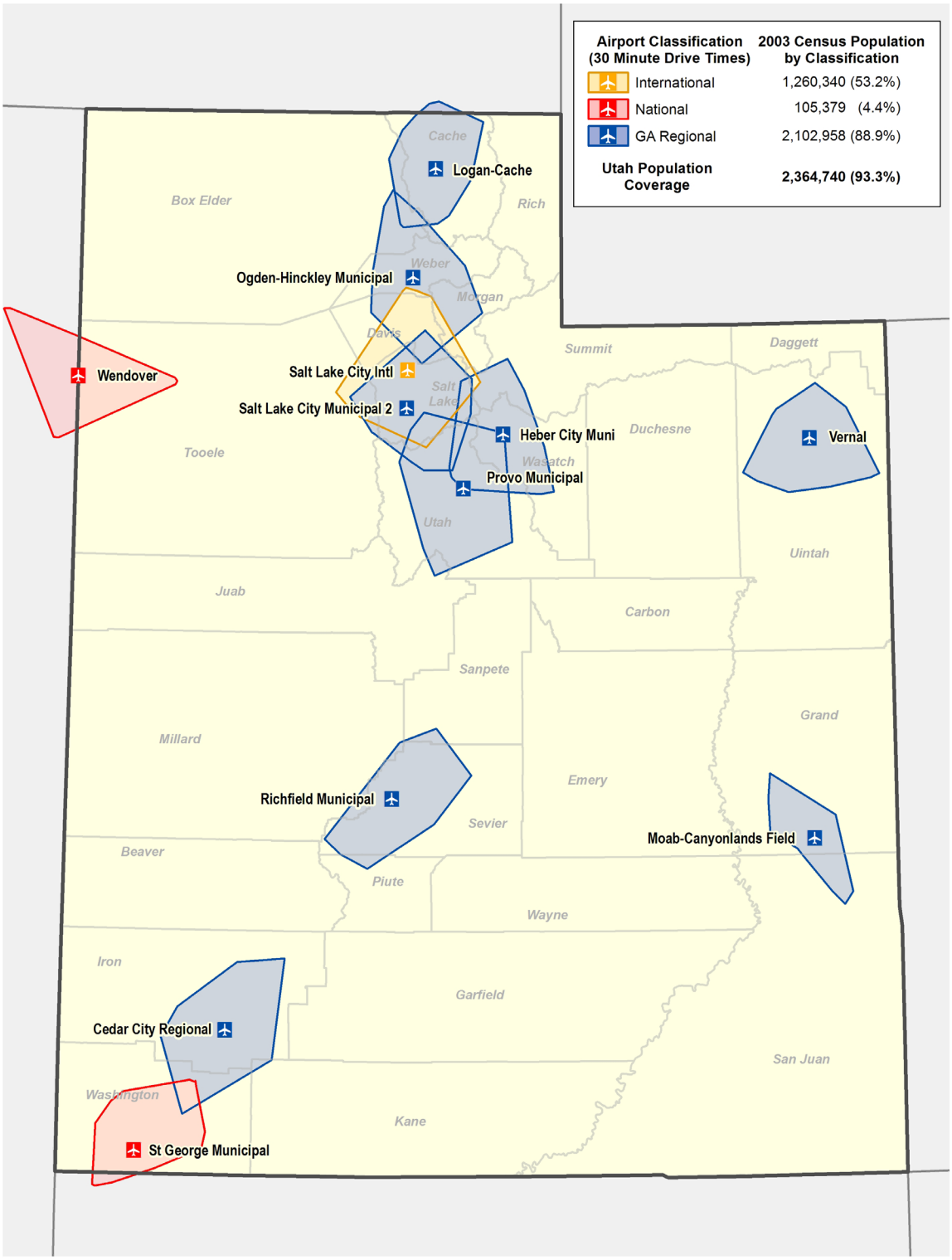
Exhibit 5-9 identifies the availability of these items at each system airport. Twelve of the state's airports possess all of the criteria necessary to fully accommodate VLJ aircraft. As shown in **Exhibit 5-10** the 30-minute drive times associated with these 12 airports comprise over 93 percent of the state's population. It should be noted that a runway length of at least 4,000 feet is the only criteria that is essential for the majority of VLJ operations. However, the lack of the other facilities and services most notably an instrument approach procedure and the availability of Jet A fuel, are likely to limit the utility of the airport to VLJ users, making the airport a much less desirable facility. Among the 47 airports in the Utah system, 18 provide the three essential criteria required by VLJ operators: 4000' runway length, instrument approach and Jet A fuel. The Blanding, Brigham City, Kanab, Milford, Price and Roosevelt airports provide all the essential facilities and services required by VJL aircraft with the exception of rental cars.

Exhibit 5-9
VLJ Facilities and Services Available at Utah Airports



Source: 2007, UDOA, Wilbur Smith Associates

Exhibit 5-10
Airports with Facilities and Services Supporting VLJ Operations



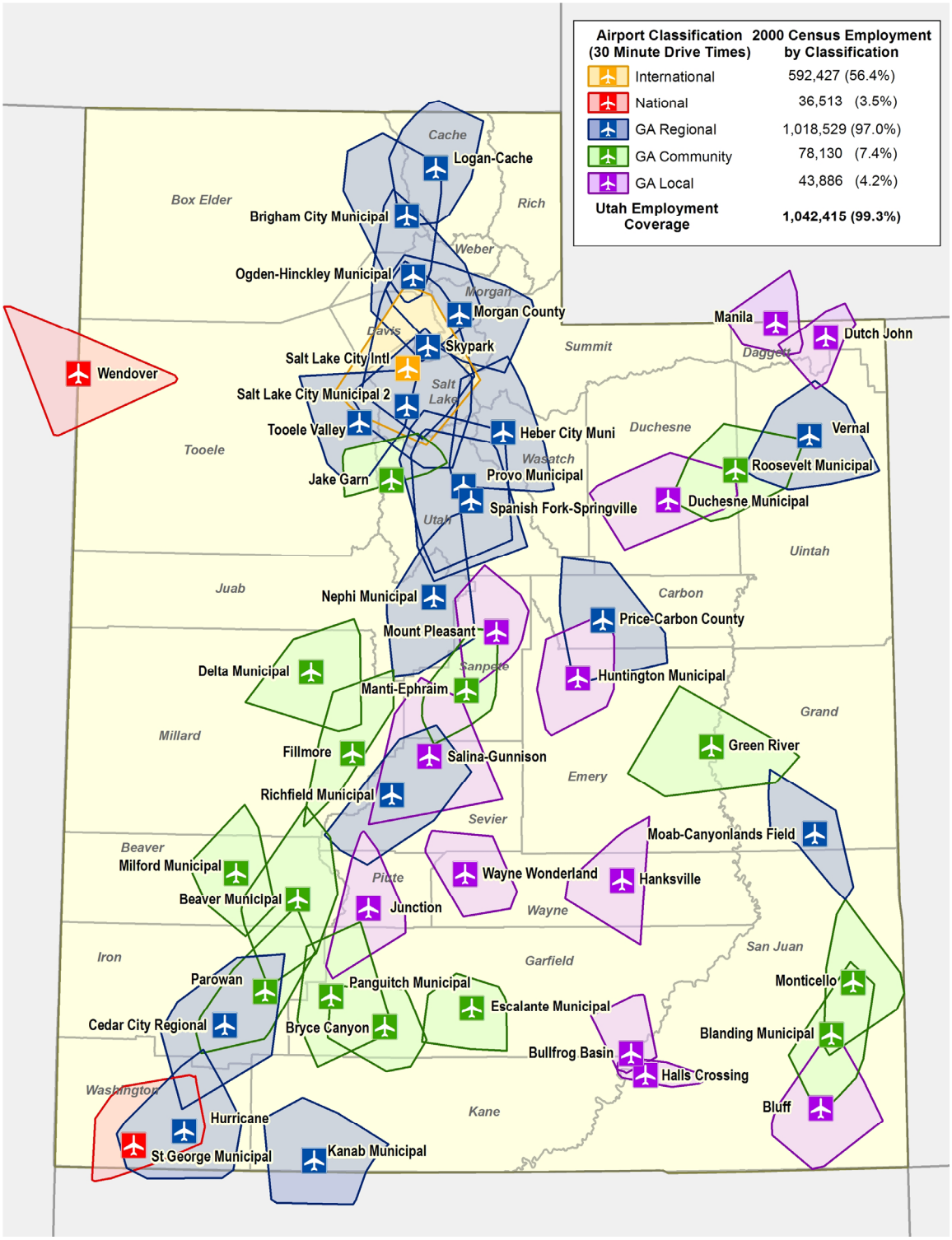
Source: US Census 2003, Wilbur Smith Associates

Percent of state employment within 30-minute drive time of a system airport

In order for airports in the Utah system to provide support to state and local economies, it is important that airports provide adequate coverage and service to areas of employment throughout the state. Employment levels in each airport service area are representative of the number of potential businesses (and their employees) that could rely on aviation services. Businesses throughout the state utilize airports either as users or as businesses that are reliant on business travelers or tourists visiting their location. Businesses also utilize aviation services such as air cargo to transport goods or packages.

Employment data for Utah was obtained from Woods and Poole Inc. In order to analyze the levels of employment in relation to the states airports; the employment figures were assigned to block group level Census data for analysis of each 30-minute service area. Assigning the employment figures to the block group level Census data provides a means to proportionately assign appropriate employment statistics to each airport service area. **Exhibit 5-11** shows that more than 99 percent of the state's employment is within a 30-minutes drive time of one or more system airports. Approximately 56 percent of the state's employment is within a 30 minute drive time of the Salt Lake City International Airport, while 97 percent of the state's employment lies within 30 minutes of an airport in the GA Regional category.

Exhibit 5-11
Employment within 30-minute Drive Time of System Airports



Source: 2000 U.S. Census, Wilbur Smith Associates, 2007

Businesses with a propensity to use aviation within a 30-minute drive time of a system airport

In order to assess business-related demand on Utah's airport system, employers or businesses within Utah with a propensity to utilize aviation services were identified. The North American Industry Classification System (NAICS) codes of businesses utilizing aviation services were identified through thousands of business survey responses gathered by Wilbur Smith Associates while conducting airport economic impact and air service studies throughout the U.S., including economic analyses for Utah's airports. Businesses in these NAICS codes were obtained for Utah to determine their locations relative to system airports.

Table 5-2 presents the number of businesses identified within each NAICS code, and the minimum numbers of employees required in each category for the business to be included in this analysis. Businesses within each NAICS code were identified that employ between 20 and 100 employees, depending on the type of business. Limiting this analysis to businesses having a minimum the number of employees identified in Table 5-2 helps to identify businesses that are most likely to place measurable demand on Utah's system of airports. **Exhibit 5-12** depicts the location of these businesses in relation to the state's airports. Also shown are 30-minute drive time service areas for each system airport.

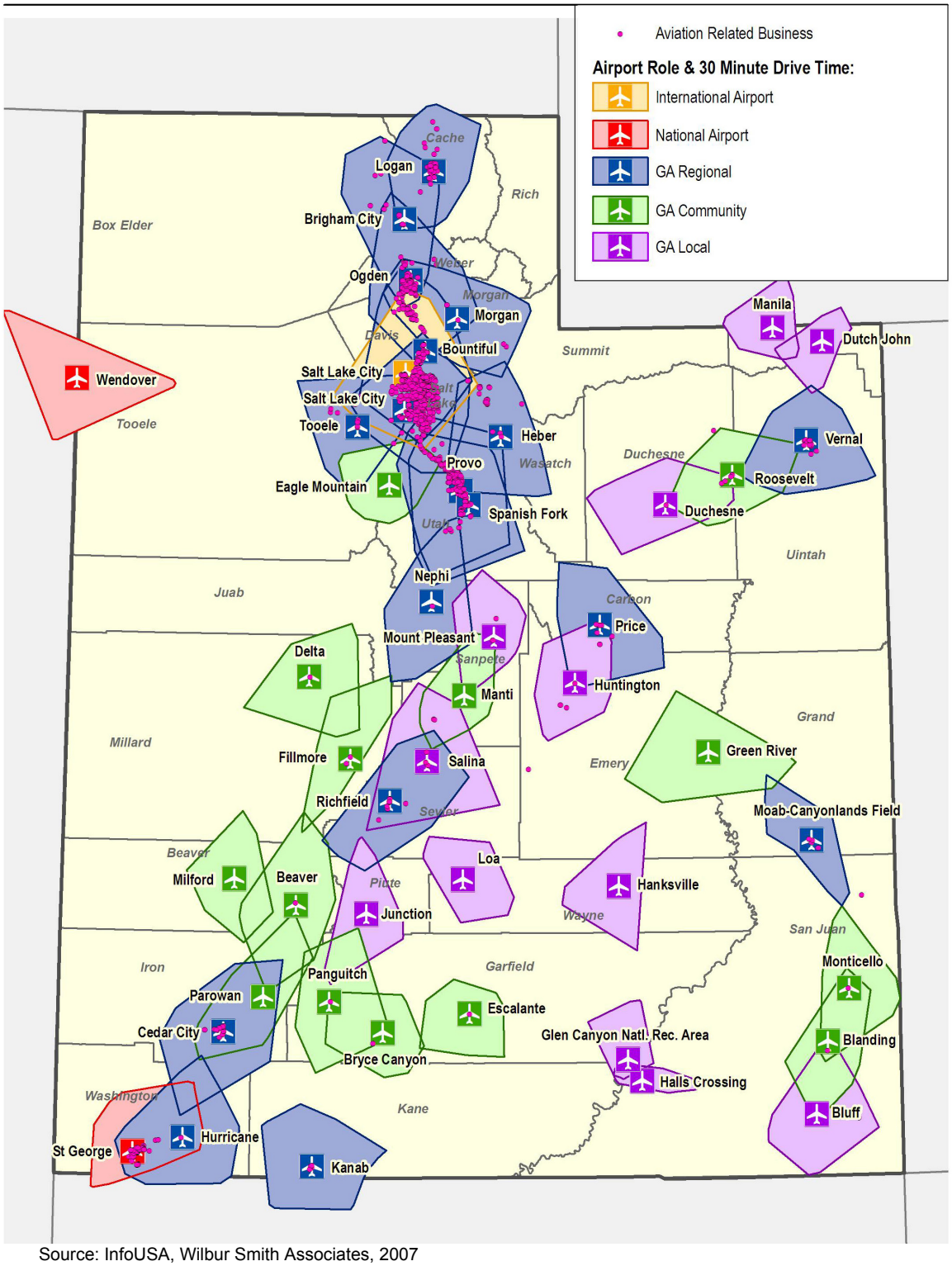
As would be expected, the majority of businesses are located in Utah's larger cities, with Salt Lake City International Airport being located near the greatest number of businesses. Among the 1,482 businesses identified in this analysis, all but three are within 30 minutes driving distance from an airport in the state system, and all but 20 are within 30 minutes driving distance of a Regional, National, or International airport.

Table 5-2
Utah Businesses Likely to Utilize Aviation Services

NAICS	Minimum Number of Employees	Business in Utah
Professional Services	20	748
Manufacturing	100	275
Wholesale Trade	100	177
Health Services	100	143
Finance and Insurance	100	83
Communications	100	24
Oil and Gas Extraction	50	23
Utilities	100	9
Total		**1,482**

Source: InfoUSA, Wilbur Smith Associates, 2007

Exhibit 5-12
Businesses with a Propensity to Utilize Aviation Services



Source: InfoUSA, Wilbur Smith Associates, 2007

GOAL CATEGORY: FACILITIES AND ACCESSIBILITY

An important goal of any airport system is to provide physical facilities to meet airport user needs. The mission of airports is to provide quick, convenient, and safe transportation of people and goods. An adequate airport system requires certain facilities to process the movement and storage of aircraft, and to meet the needs of the people who use airports.

The ability of any airport system to meet the accessibility goal can be determined in several ways. The facilities evaluation of the aviation system is determined by examining the ability of the airports to meet the facility and service objectives established for the role the airport plays in the system.

As discussed previously, air accessibility is influenced by factors such as the airport's type of approach and the availability of on-site weather reporting equipment. Ground accessibility can be measured by determining the coverage or availability of access provided by system airports to all geographic areas of the state. This is evaluated by determining what percentage of the state's population can access airports in the role classifications established for the study.

Performance measures used to evaluate the system's ability to provide adequate ground and air access and facilities are discussed below and include the following measures.

- Percent of population within a 30-minute drive-time of an airport with precision or non-precision instrument approach
- Percent of population and land area within a 30-minute drive time of each Utah airport role category
- Percent of airports meeting facility and service objectives
- Percent of population and land area within a 30-minute drive time of an airport included in the FAA National Plan of Integrated Airport Systems (NPIAS)
- Percent of registered pilots within a 30-minute drive time of a system airport

Percent of population within a 30-minute drive time of an airport with an instrument approach procedure

A published instrument approach procedure enables appropriately equipped aircraft to land at an airport during poor weather or instrument meteorological conditions (IMC). When the cloud level, or ceiling, is less than 1,000 feet above the ground and/or the forward visibility is less than three miles, IMC exists and often creates undesirable circumstances for arriving aircraft. The probability of landing at an airport in such conditions is increased with the availability of an instrument approach procedure. **Table 5-3** presents all system airports and their published approach capabilities. In Chapter Three – Airport Role Analysis, objectives for various facilities and services were developed for airports by system role. In terms of approaches, an objective has been established for National Airports to provide a precision instrument approach. GA

Regional Airports should have at least a non-precision straight-in approach, and GA Community Airports should have a non-precision approach. No approach objective was developed for GA Local Airports.

Exhibit 5-13 graphically depicts the Utah Airport System airports with published approach capabilities. This exhibit also identifies the percentage of Utah's population within a 30-minute drive time of an airport with instrument approach capability. Of the 47 airports in the Utah system, 22 (47 percent) have an instrument approach procedure. These airports serve 95 percent of Utah's population and cover 20 percent of the state's land area.

Table 5-3
Approach Procedures at Utah Airports

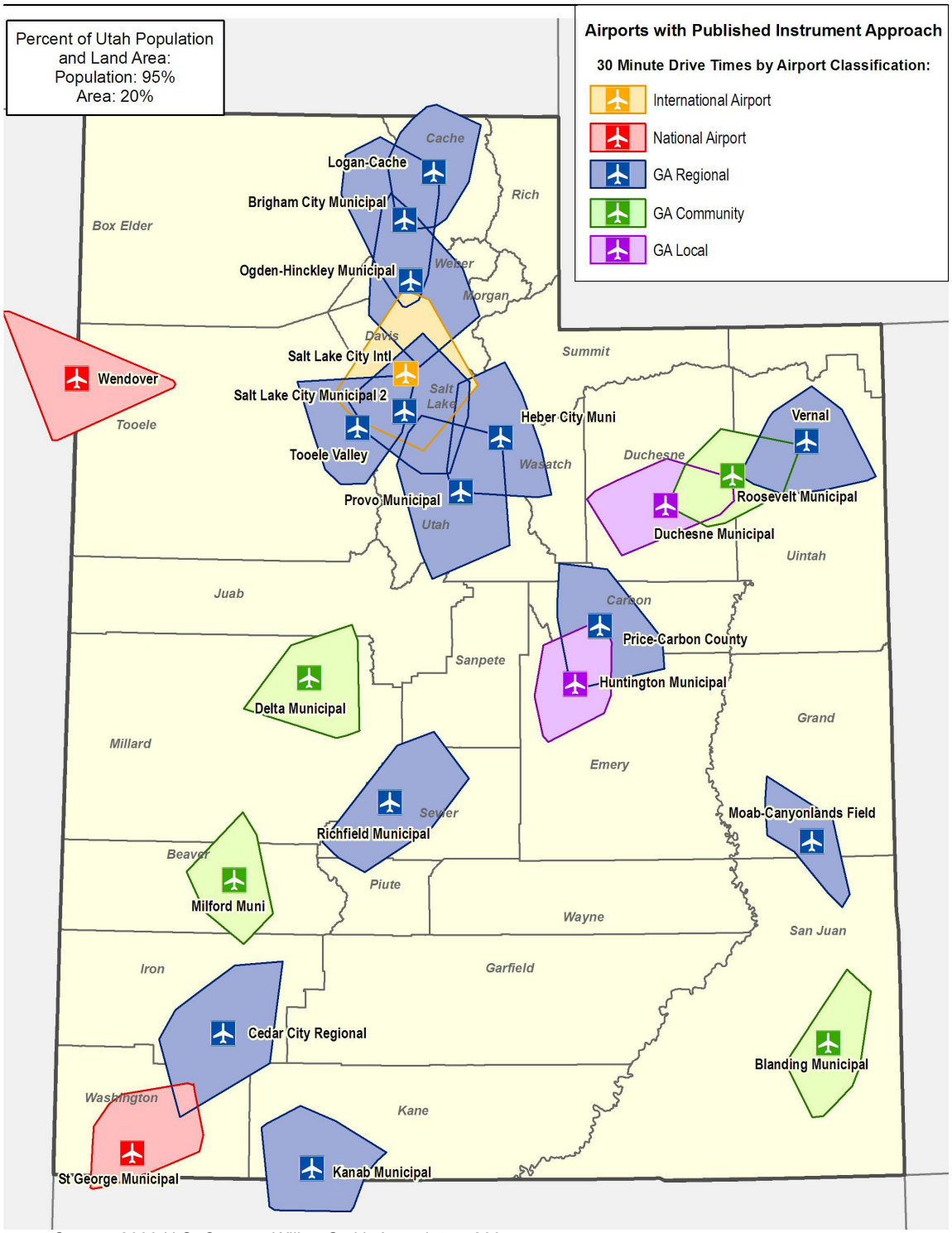
Associated City	Airport	Approach Category
International Airports		
Salt Lake City	Salt Lake City International	Precision
National Airports		
St. George	St. George Municipal	Non-Precision - Straight-in
Wendover	Wendover	Non-Precision - Straight-in
Regional Airports		
Bountiful	Skypark	Visual
Brigham City	Brigham City Municipal	Non-Precision - Straight-in
Cedar City	Cedar City Regional	Precision
Heber	Heber City Municipal	Non-Precision - Circling
Hurricane	Hurricane	Visual
Kanab	Kanab Municipal	Non-Precision - Straight-in
Logan	Logan-Cache	Non-Precision - Straight-in
Moab	Moab-Canyonlands Field	Non-Precision - Straight-in
Morgan	Morgan County	Visual
Nephi	Nephi Municipal	Visual
Ogden	Ogden-Hinckley Municipal	Precision
Price	Price-Carbon County	Non-Precision - Straight-in
Provo	Provo Municipal	Precision
Richfield	Richfield Municipal	Non-Precision - Straight-in
Salt Lake City	Salt Lake City Muni 2	Non-Precision - Straight-in
Spanish Fork	Spanish Fork-Springville	Visual
Tooele	Tooele Valley Airport	Non-Precision - Straight-in
Vernal	Vernal	Non-Precision - Straight-in

Table 5-3, Continued
Approach Procedures at Utah Airports

Associated City	Airport	Approach Category
Community Airports		
Beaver	Beaver Municipal	Visual
Blanding	Blanding Municipal	Non-Precision - Straight-in
Bryce Canyon	Bryce Canyon	Visual
Delta	Delta Municipal	Non-Precision - Straight-in
Eagle Mountain	Jake Garn	Visual
Escalante	Escalante Municipal	Visual
Fillmore	Fillmore	Visual
Green River	Green River	Visual
Manti	Manti-Ephraim	Visual
Milford	Milford Municipal	Non-Precision - Circling
Monticello	Monticello	Visual
Panguitch	Panguitch Municipal	Visual
Parowan	Parowan	Visual
Roosevelt	Roosevelt Municipal	Non-Precision - Straight-in
Local Airports		
Bluff	Bluff Airport	Visual
Duchesne	Duchesne Municipal	Non-Precision - Circling
Dutch John	Dutch John	Visual
Glen Canyon Natl. Rec. Area	Bullfrog Basin	Visual
Halls Crossing	Halls Crossing	Visual
Hanksville	Hanksville	Visual
Huntington	Huntington Municipal	Non-Precision - Circling
Junction	Junction	Visual
Loa	Wayne Wonderland	Visual
Manila	Manila	Visual
Mount Pleasant	Mount Pleasant	Visual
Salina	Salina-Gunnison	Visual

Source: UDOA, Wilbur Smith Associates, 2007

Exhibit 5-13
Population Served by an Airport with an Instrument Approach



Source: 2003 U.S. Census, Wilbur Smith Associates, 2007

Percent of population and land area within a 30 minute drive time of each Utah airport category

The FAA generally recommends that system airports be within a 30-minute drive time of their intended users. GIS analysis presented in the exhibits below show that when all 47 system airports are considered, over 99 percent of Utah's population is within a 30-minute drive of at least one and, in some cases, multiple system airports. Physically, the 30-minute drive time coverage provided by all of the system airports is approximately 33 percent of Utah's land area. The GIS analysis was then conducted for the airports in each of the five roles to determine the percentage of the population and land area within a 30-minute drive time of the different airport roles. Airports in a higher role, such as the National category, are considered to meet if not exceed the minimum needs of GA Regional, GA Community and GA Local airport users. As a result, population coverage provided by a less demanding role also includes the compounded coverage provided by any of the higher roles. Although an airport in a higher role may provide the minimum facility and service objectives for an airport in a lower role, certain specialty aviation activities such balloon and glider operations are not always practical or warranted at busier, more demanding airports. For each of the associated graphics identifying population coverage, airports in a higher role are shown in addition to the coverage of the role that is exhibited.

The Salt Lake City International Airport is the only airport in the International category. The 30-minute drive time service area for this airport covers more than half of Utah's population, providing coverage to 53 percent of the people in the state as shown in **Exhibit 5-14**. This coverage represents approximately 1.6 percent of the land area in Utah.

The two airports classified as National are within a 30-minute drive time of over 4 percent of Utah's population as identified in **Exhibit 5-15**. This coverage represents approximately 2 percent of the land area in Utah. Airports in this role include St. George Municipal located in the southwest corner of the state, and Wendover located west of Salt Lake City on the Utah-Nevada border. Combined coverage of airports in the International and National categories provide service to nearly 58 percent of the state's population.

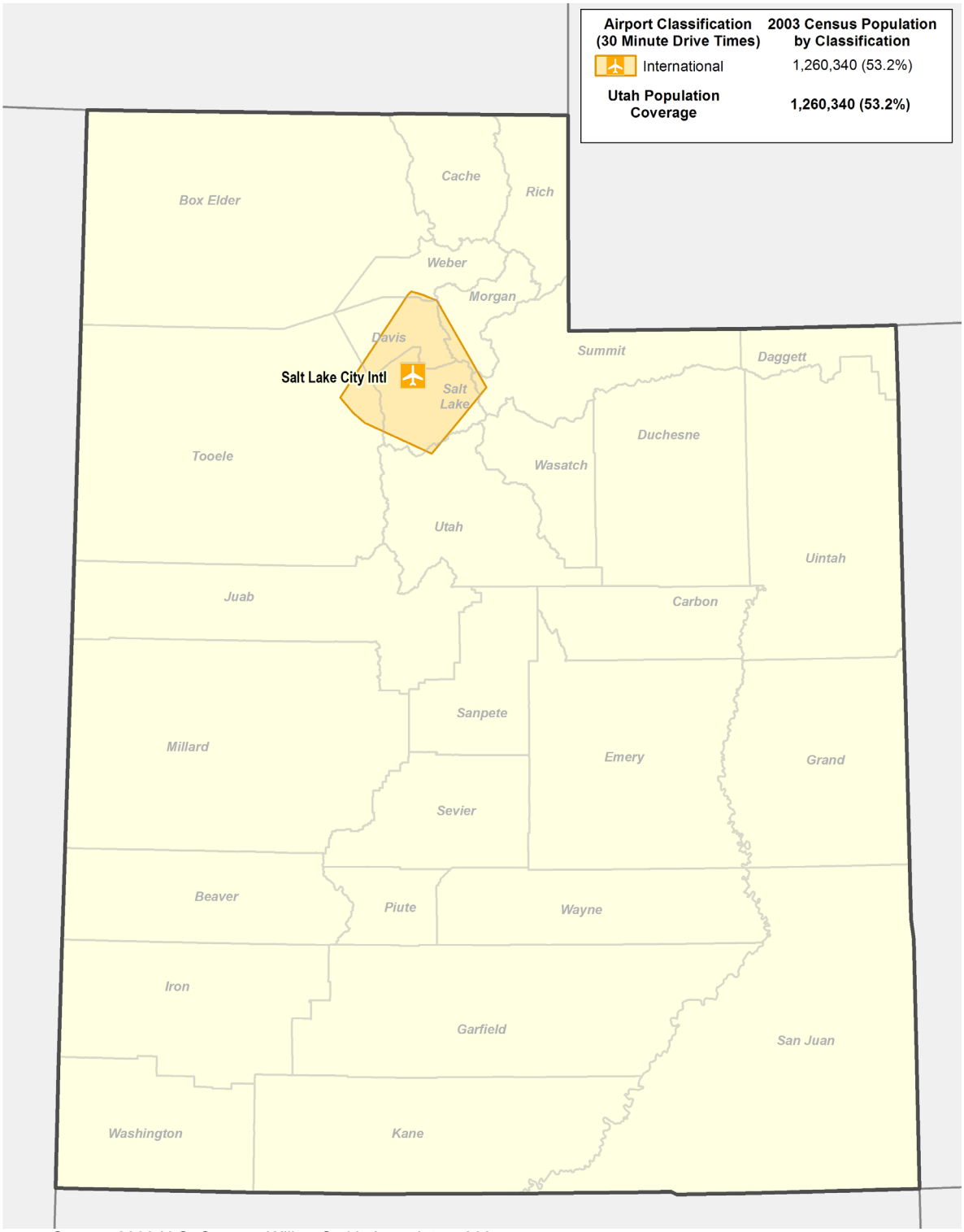
GA Regional airports provide the greatest amount of coverage in Utah among the five role categories. **Exhibit 5-16** shows that over 96 percent of Utah's population lies within a 30-minute drive time of one or more of the 18 GA Regional airports. These airports also cover the greatest percentage of Utah's land area at nearly 15 percent. GA Regional airports provide some duplicate coverage already provided by International and National airports. When the overall coverage from the three airport categories is combined, approximately 97 percent of Utah's population is within a 30-minute drive time of an airport in one of these three categories.

The 14 airports in the GA Community role are located within a 30-minute drive time of nearly 8 percent of Utah's population. **Exhibit 5-17** shows that these airports provide

most of their coverage in the central and southern portions of the state. The coverage provided by the GA Community airports 30-minute drive times is approximately 10 percent of Utah's land area. All of the airports in this role with the exception of Jake Garn and Roosevelt are located in the southern half of the state. When the coverage provided by GA Community airports is combined with that of the International, National and GA Regional, over 99 percent of Utah's population is within a 30-minute drive time of an airport in one of these four classifications.

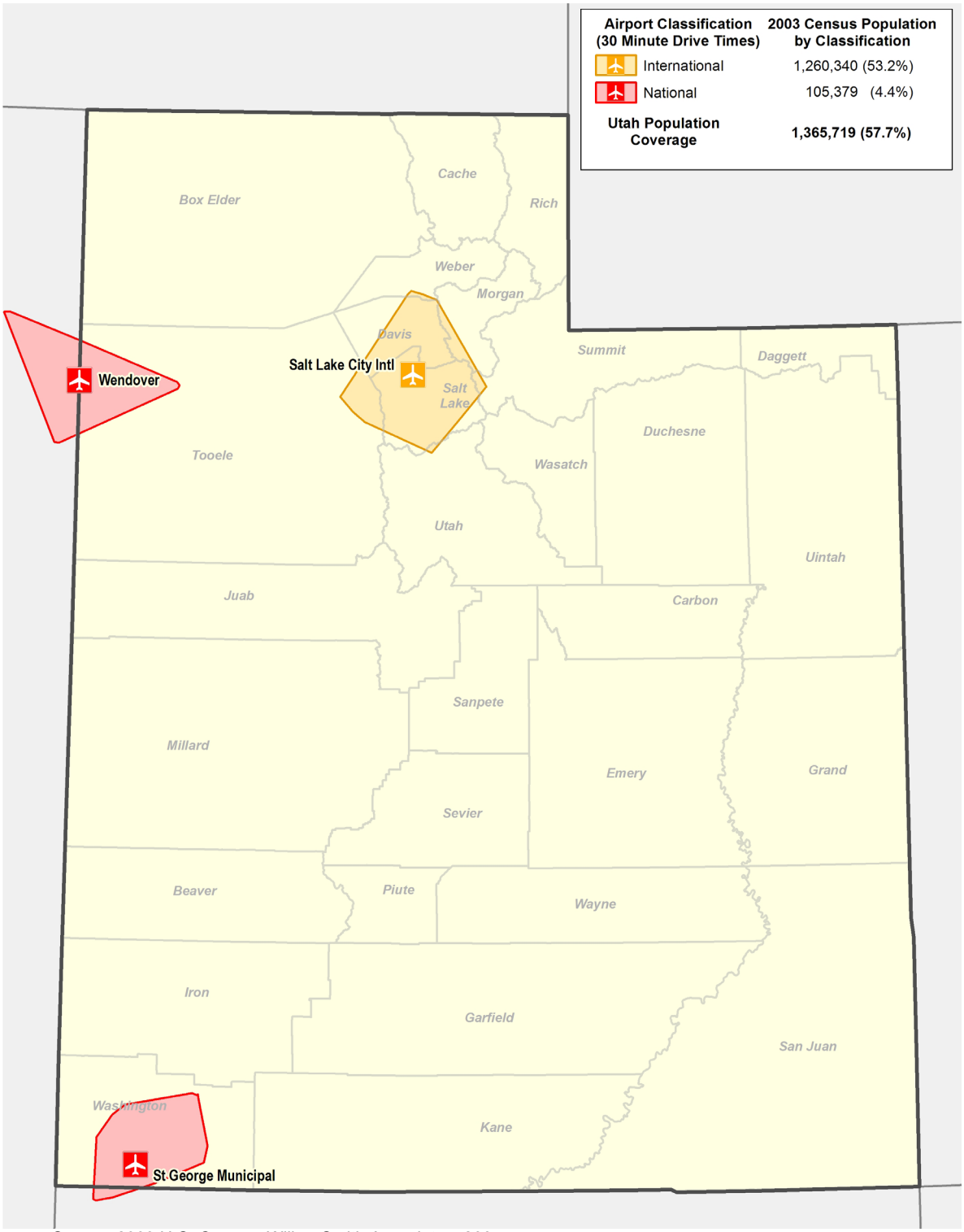
The Utah system of airports contains 12 airports in the GA Local category. These airports are located in some of the most rural areas of the state and as a result provide access to a limited segment of the state's population. **Exhibit 5-18** identifies the population coverage provided by the airports in this role. The airports in the GA Local category serve nearly 5 percent of the state's population and cover almost 3 percent of the state's land area. When combined, the five categories of airports in the Utah system provide access to 99.7 percent of Utah's population.

Exhibit 5-14
30-Minute Drive Time to International Airports



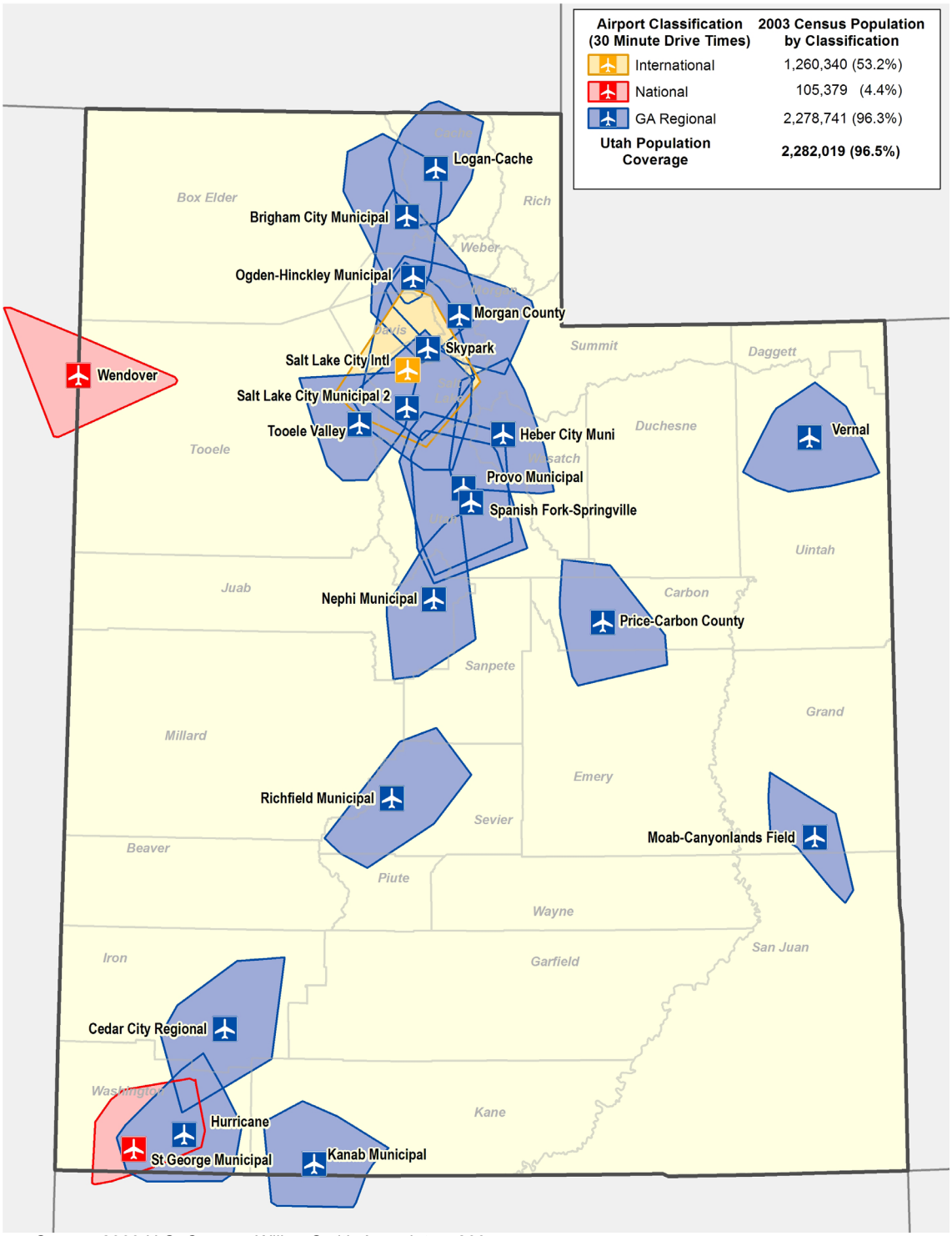
Source: 2003 U.S. Census, Wilbur Smith Associates, 2007

Exhibit 5-15
30-Minute Drive Time to National Airports



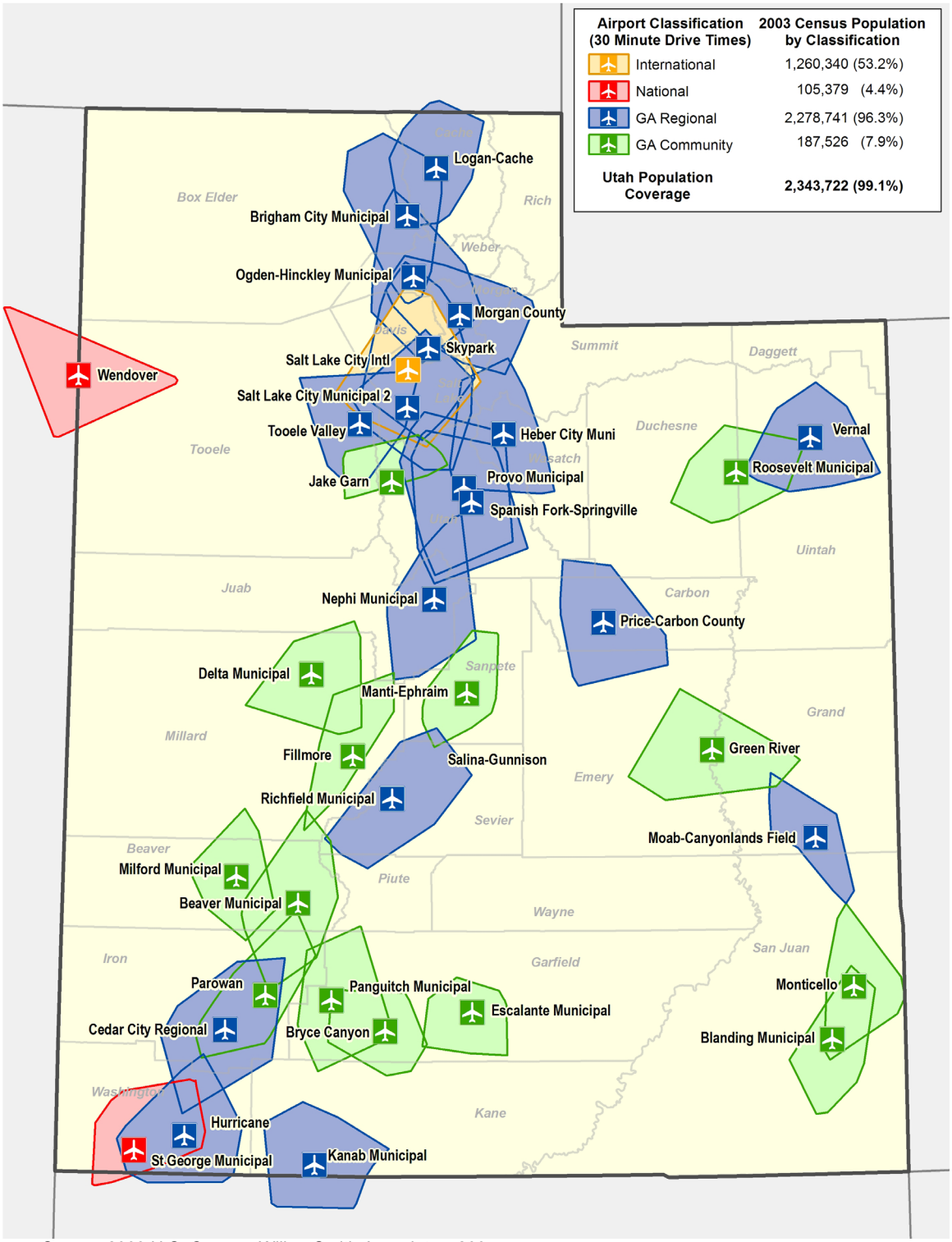
Source: 2003 U.S. Census, Wilbur Smith Associates, 2007

Exhibit 5-16
30-Minute Drive Time to GA Regional Airports



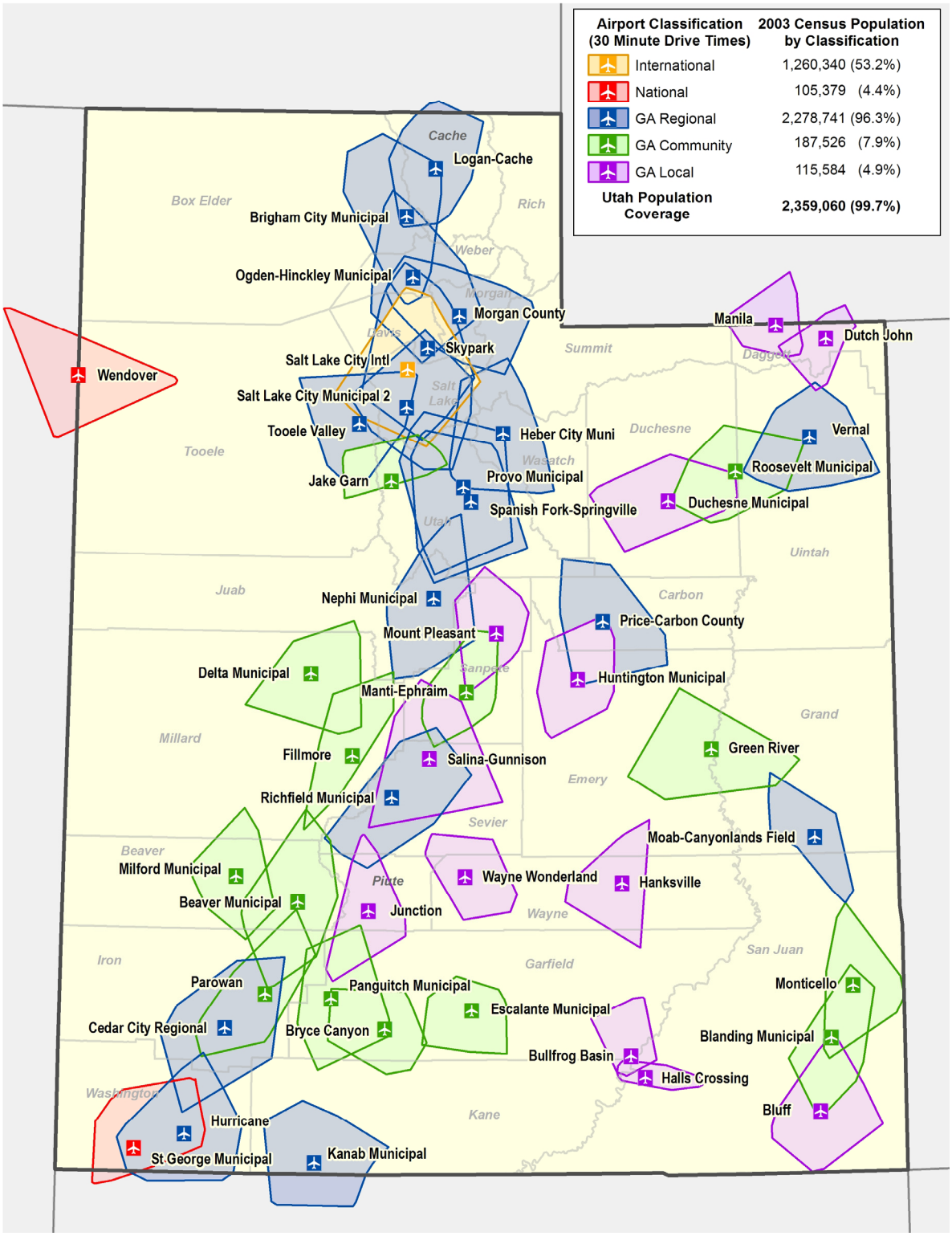
Source: 2003 U.S. Census, Wilbur Smith Associates, 2007

Exhibit 5-17
30-Minute Drive Time to GA Community Airports



Source: 2003 U.S. Census, Wilbur Smith Associates, 2007

Exhibit 5-18
30-Minute Drive Time to GA Local Airports

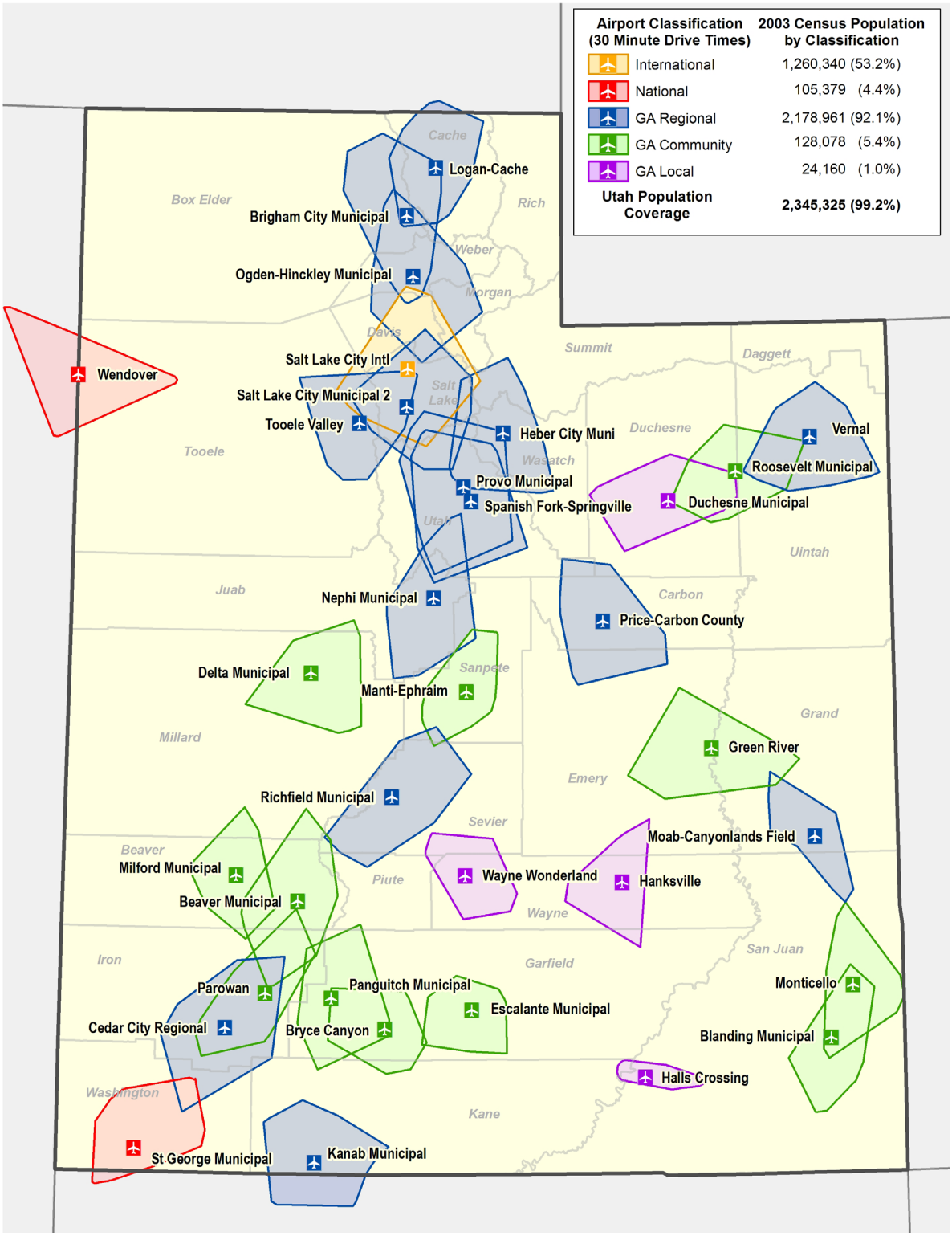


Source: 2003 U.S. Census, Wilbur Smith Associates, 2007

Percent of population and land area within a 30 minute drive time of an airport included in the FAA National Plan of Integrated Airport Systems (NPIAS)

The NPIAS is the national airport system plan developed by the FAA to identify aviation facilities of significance to the national air transportation network. NPIAS airports are eligible to apply for federal grants for airport planning and certain capital improvements. These federal grants currently fund 95 percent of all eligible expenses with the remaining percentage being the responsibility of the local airport sponsor. The UDOA may assist airport sponsors with 50 percent of the required local matching funds. Due to the availability of this funding program, airports included in the NPIAS typically have a much greater level of facilities and services available to airport users. Additionally, this funding program allows airports included in the NPIAS to develop new or improved facilities to meet current or projected demand. Of the 47 airports comprising the Utah system of airports, 34 are currently included in the NPIAS. **Exhibit 5-19** shows the airports in Utah included in the NPIAS. Over 99 percent of Utah's population is within a 30-minute drive time of an airport included in the NPIAS, and almost 29 percent of Utah's land area is covered by these airports.

Exhibit 5-19
Population within 30-minute Drive Time of a NPIAS Airport



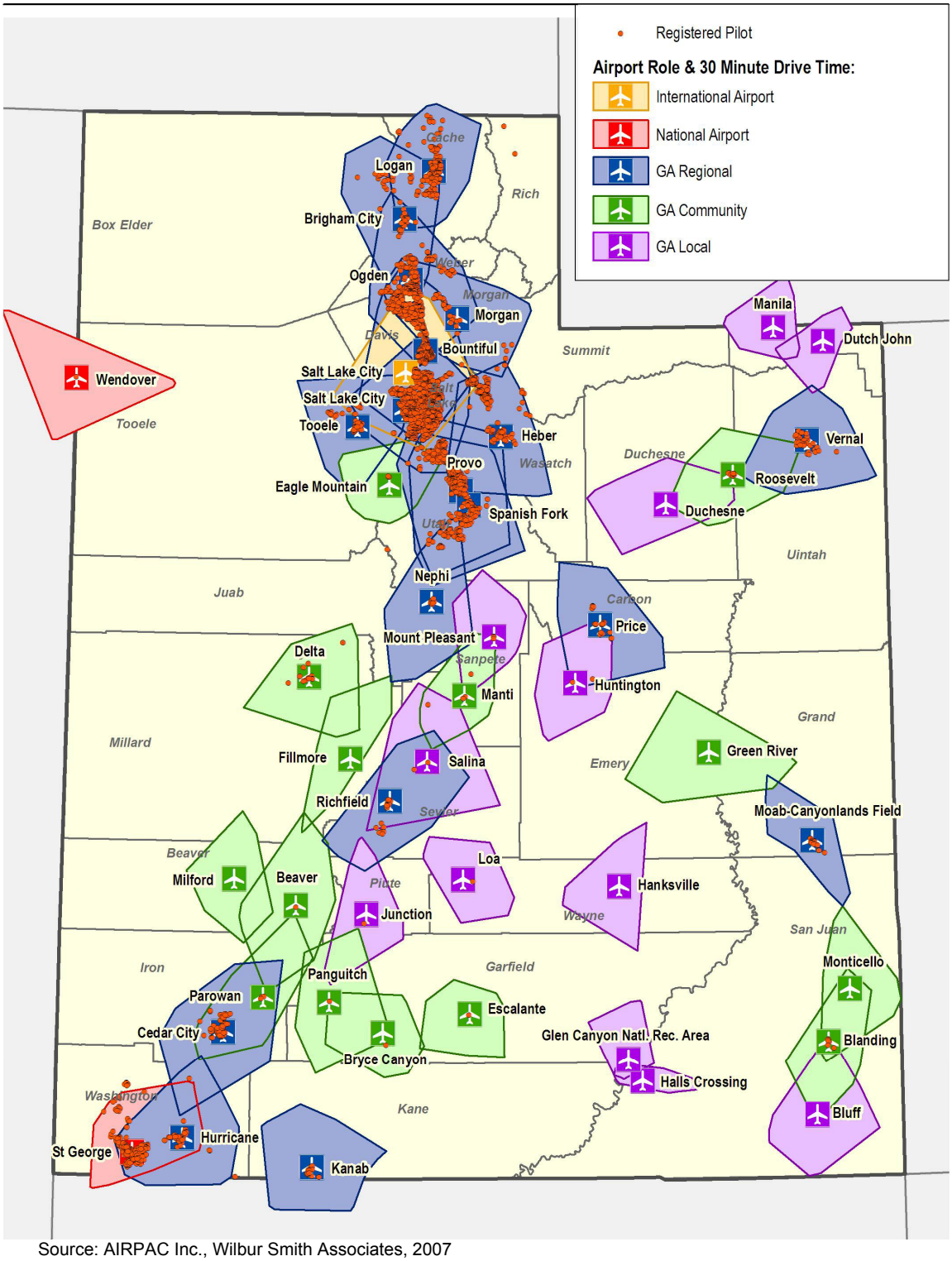
Source: 2003 U.S. Census, Wilbur Smith Associates, 2007

Percent of registered pilots within a 30-minute drive time of a system airport

It is reasonable to assume that identifying the location of the state's registered pilots provides an indicator of the demand for aviation activity at each airport in the system. Additionally, by identifying the location of registered pilots in Utah, it is possible to see if there are pilots not located near an existing system airport.

In order to perform this task, addresses were obtained for each pilot in the state holding a current FAA Medical Certificate. The data was obtained from AIRPAC Inc. and contained 7,076 pilots. The pilot locations were overlaid with the state's 47 system airports and their corresponding 30-minute drive time coverage in the GIS. **Exhibit 5-20** displays the pilot locations with respect to the drive time coverage in "dot-density" format and provides the ability to see the concentration of pilots as well as those located outside of a 30-minute boundary of a system airport. This analysis indicates that Utah's 47 airports provide access to nearly 100 percent of the state's registered pilots. The only pilots located outside the 30-minute drive time boundary are located in Rich County in the far northern portion of the state and in Washington County in the southwestern portion of the state.

Exhibit 5-20
Registered Pilots within 30-minute Drive Time of a System Airport



Source: AIRPAC Inc., Wilbur Smith Associates, 2007

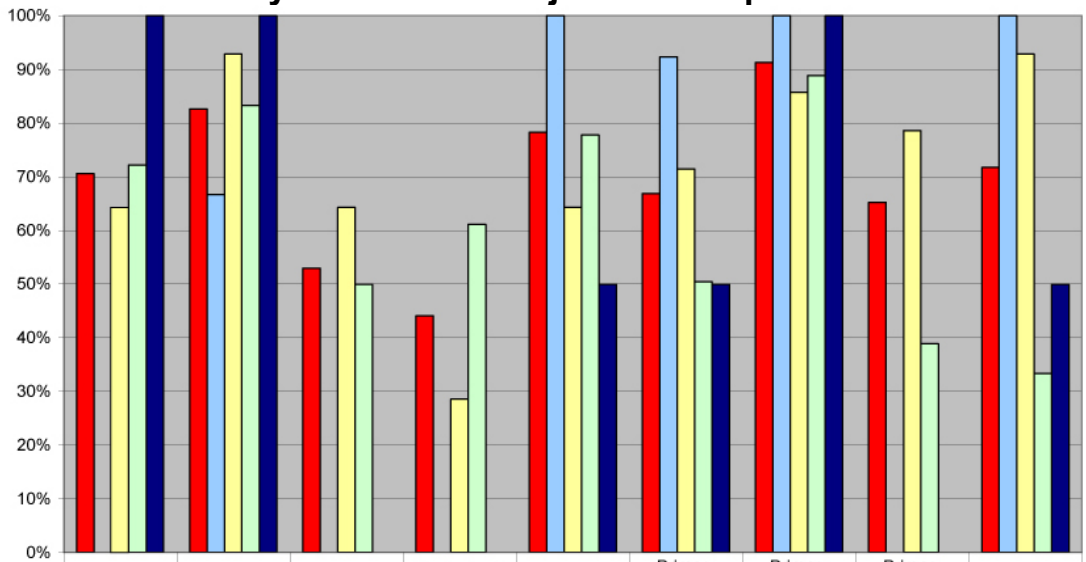
Percent of Airports Meeting Facility and Service Objectives

Chapter Three (Airport Role Analysis) established roles and facility and service objectives for each Utah system airport. In order for airports to completely fulfill their respective roles in the system, the established facility and service objectives should be met. The specific facilities and services needed depend on the role that the airport plays, with more extensive facilities needed at airports that serve larger, more sophisticated aircraft.

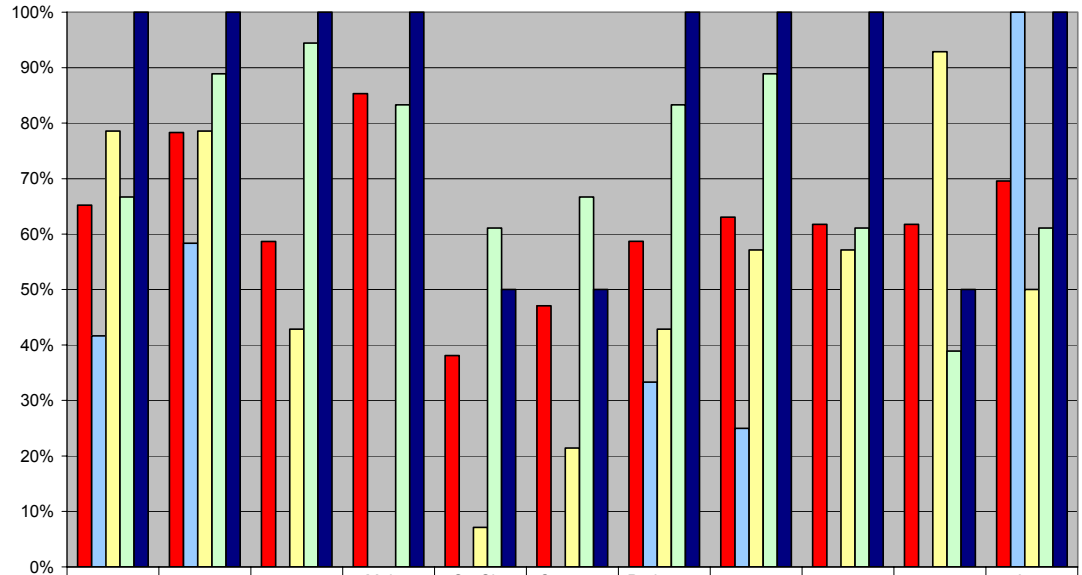
It is important to note that the purpose of the System Plan is to provide the Utah Division of Aeronautics (UDOA) a clear assessment of airport needs in the state. Facility and service deficiencies identified in this analysis do not necessarily indicate that an airport should or must meet that objective during or beyond the planning period. From an FAA funding standpoint, projects must be included and justified in an airport-specific study in order to be eligible for FAA participation. Projects must be identified on an airport layout plan (ALP) and appropriate environmental analyses must be prepared prior to consideration for funding. While the System Plan's analysis is considered in the overall context of FAA review, justification for airport-specific projects must be provided to gain FAA approval.

Exhibit 5-21 summarizes the current compliance within each role category for facility and service objectives as well as the overall system. In the instance where no specific objective has been established for a role, the corresponding data has been left blank. A complete, detailed analysis has been performed and is included in **Appendix C**. In some cases airports in a given role may not currently meet their objective. Furthermore, it is possible that in the future some airports may never meet the objectives. These facility and services objectives are just that, objectives, and serve as guidelines for the airport system as a whole to strive for when the means for compliance exist.

Exhibit 5-21
Facility and Service Objective Compliance



	Weather	Lighting	Visual Aids	Navigational Aid	Taxiway	Primary Runway Strength	Primary Runway Width	Primary Runway Length	ARC
System	71%	83%	53%	44%	78%	67%	91%	65%	72%
Local		67%			100%	92%	100%		100%
Community	64%	93%	64%	29%	64%	71%	86%	79%	93%
Regional	72%	83%	50%	61%	78%	50%	89%	39%	33%
National	100%	100%	0%	0%	50%	50%	100%	0%	50%



	Phone	Restrooms	FBO	Maint. Facilities	On-Site Rental Car	Courtesy Car	Perimeter Fencing	Terminal	Hangars	Apron	Auto Parking
System	65%	78%	59%	85%	38%	47%	59%	63%	62%	62%	70%
Local	42%	58%					33%	25%			100%
Community	79%	79%	43%		7%	21%	43%	57%	57%	93%	50%
Regional	67%	89%	94%	83%	61%	67%	83%	89%	61%	39%	61%
National	100%	100%	100%	100%	50%	50%	100%	100%	100%	50%	100%

Source: UDOA, Wilbur Smith Associates, 2007

SUMMARY

The analysis contained in this chapter summarizes the existing performance of Utah's airport system based on the roles that were initially identified for each airport in the Utah Airport System. This analysis represents a "report card" on existing facilities, services and activities. The next chapter analyzes future needs of Utah's airport system, including the identification of projects that are needed for the system to perform at its recommended level. This analysis provides the baseline for developing system recommendations and quantifying future system performance improvements.